TECHNOLOGY DEPT.

Gas Journal

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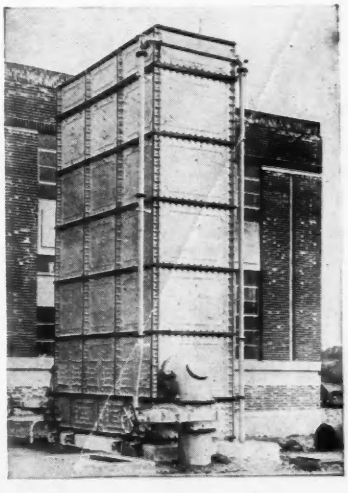

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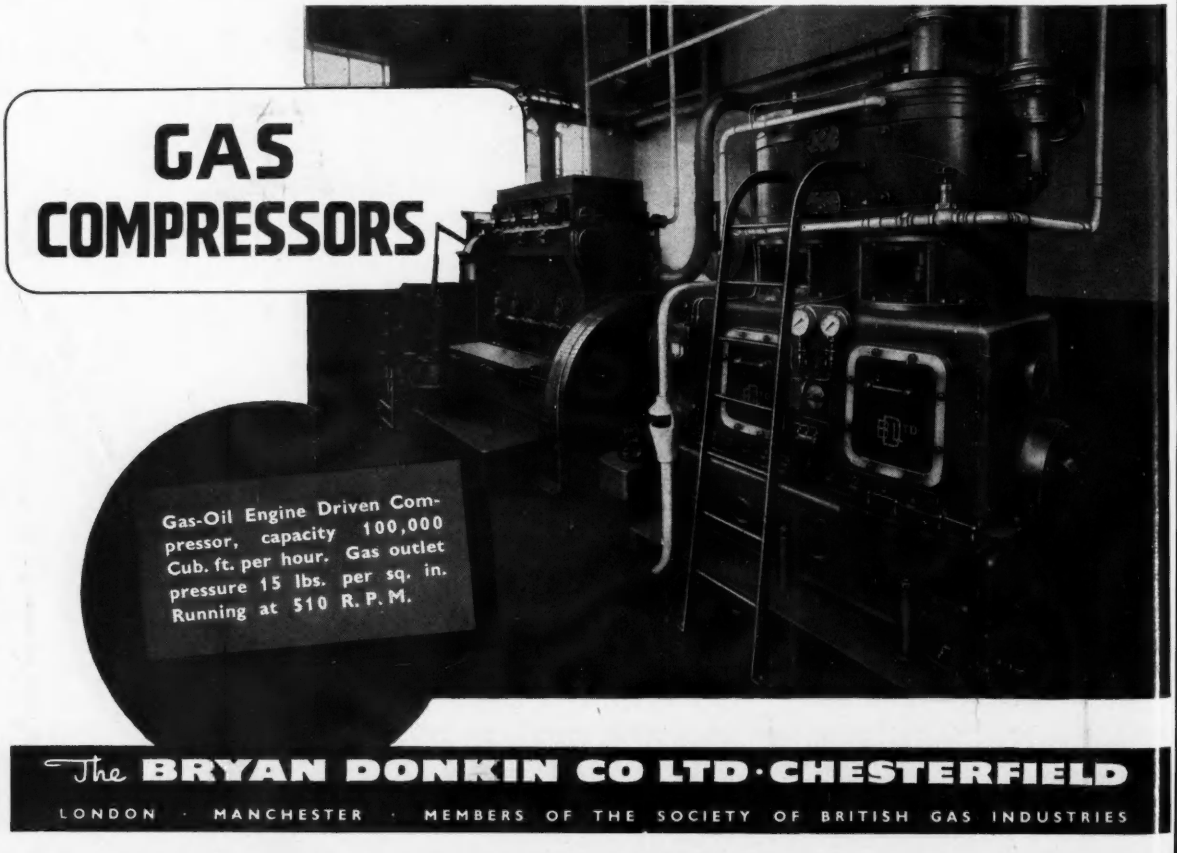
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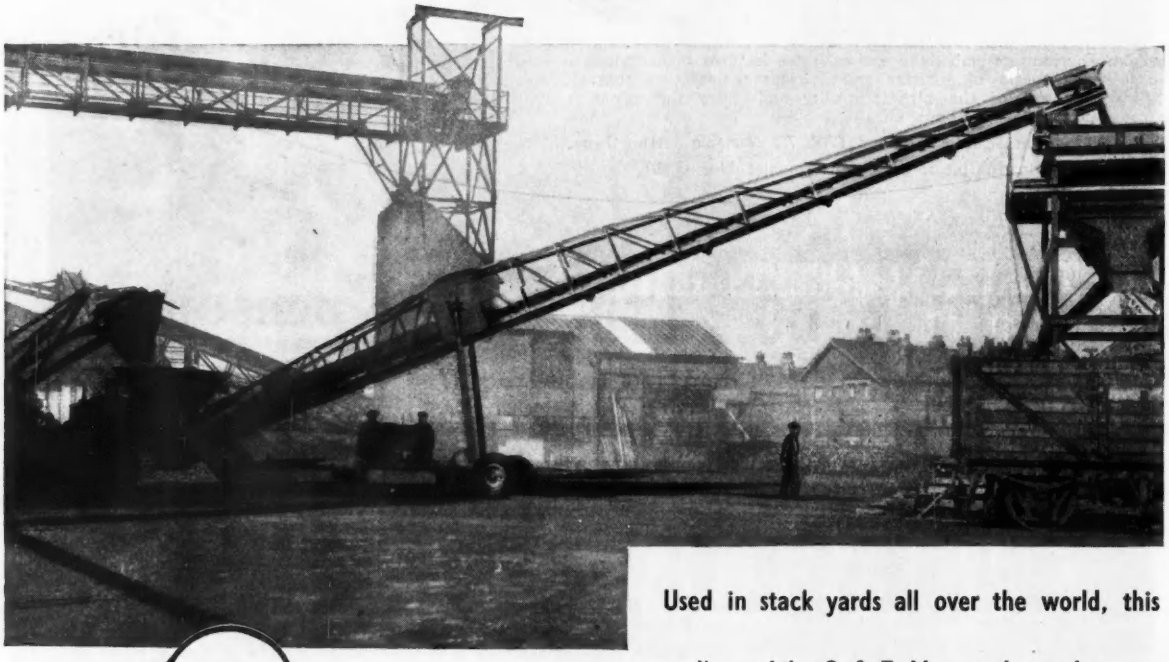

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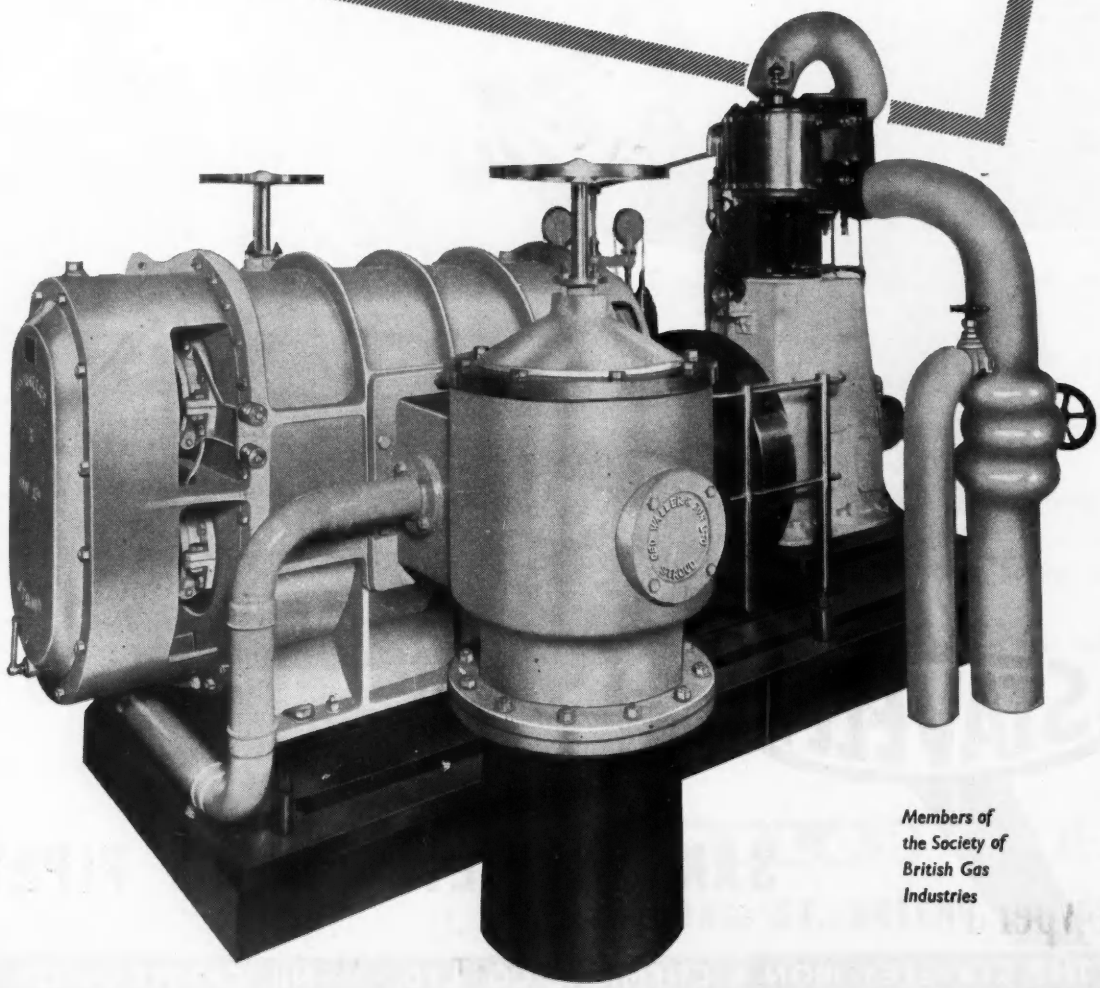

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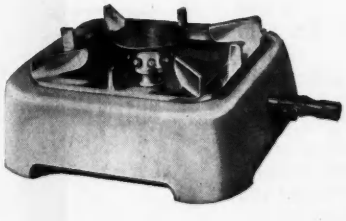

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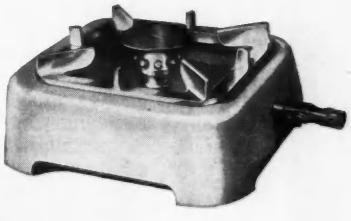

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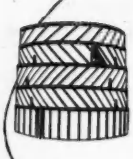

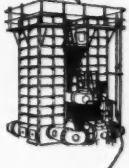

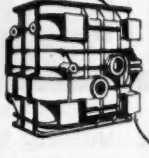

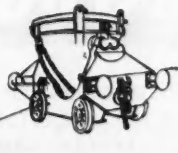

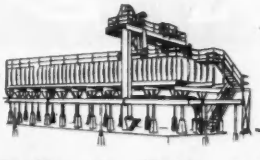

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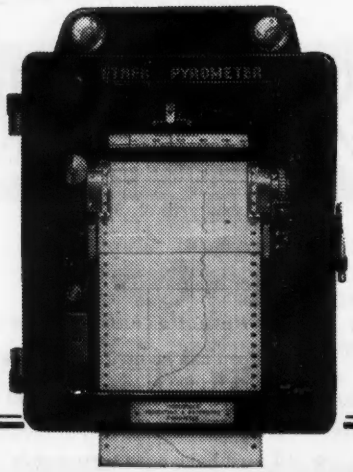

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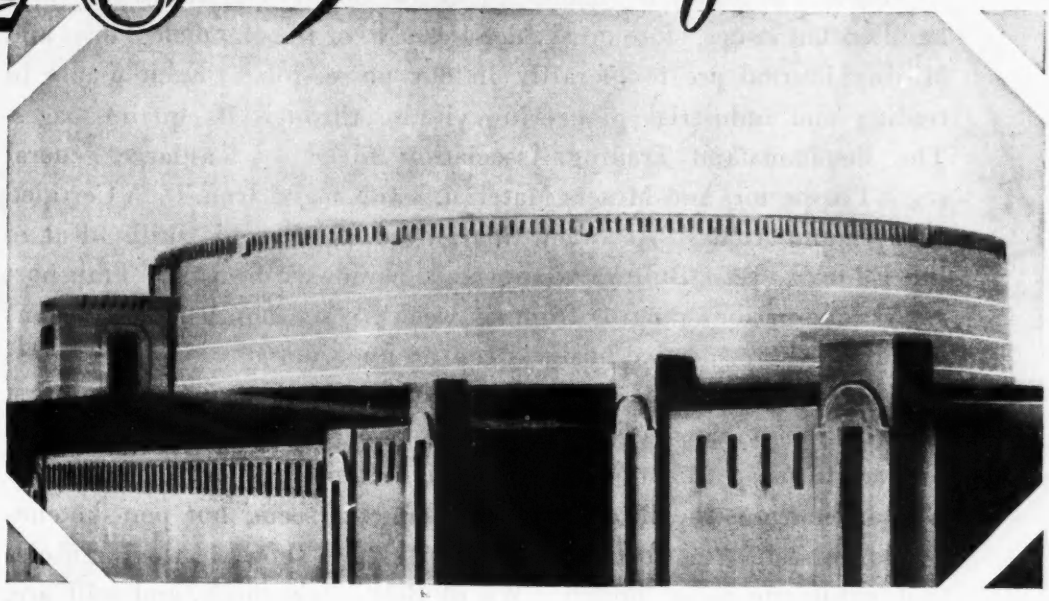

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By courtesy of a lady in Bishop Auckland, County Durham, a few early handwritten issues, close on six decades ago, of the Matabele Times and Mining Journal are temporarily in our possession. Excitements in trading and industrial pioneering vibrate through its quaint pages. The Bechuanaland Trading Association advertises "a large general stock Prospectors and Miners Material, Timber and Iron." A Certified Assayer and Analyst, Accuracy Guaranteed, proffers his skill. But to the Editor's eyes "Buluwayo appears a paradox" because "Transport riders take periods ranging from six weeks to six months, and waggons may leave the respective business centres upon one day and it is a toss up whether your parcel of needles or consignment of anchors shall first arrive. This creates a medley, resulting in the Camp being overrun today with meal, whilst Wood and Iron becomes a scarce commodity." Odd and curious the chronicles and comments seem, but pen-sketches of pioneers stripped to the waist, their sinews showing, their muscles taut, exhilarate us at Slough. We of Bell's have been, and still are, pioneers and proudly so. As specialists in Applied Asbestos, as Experts in the Science of Insulation, as Conservators of Heat and Power, as Scientific and Technological Servants to Engineers in amazing exploits, we have shared and assisted in the rapid industrial developments from Bulawayo at its birth, so to say, to Battersea in Britain's Year of Festival, which statement runs true of every part of the Commonwealth in our 50 years of growth and endeavour. Our services, now more comprehensive than ever, are in intense demand by master-engineers and their colleagues.

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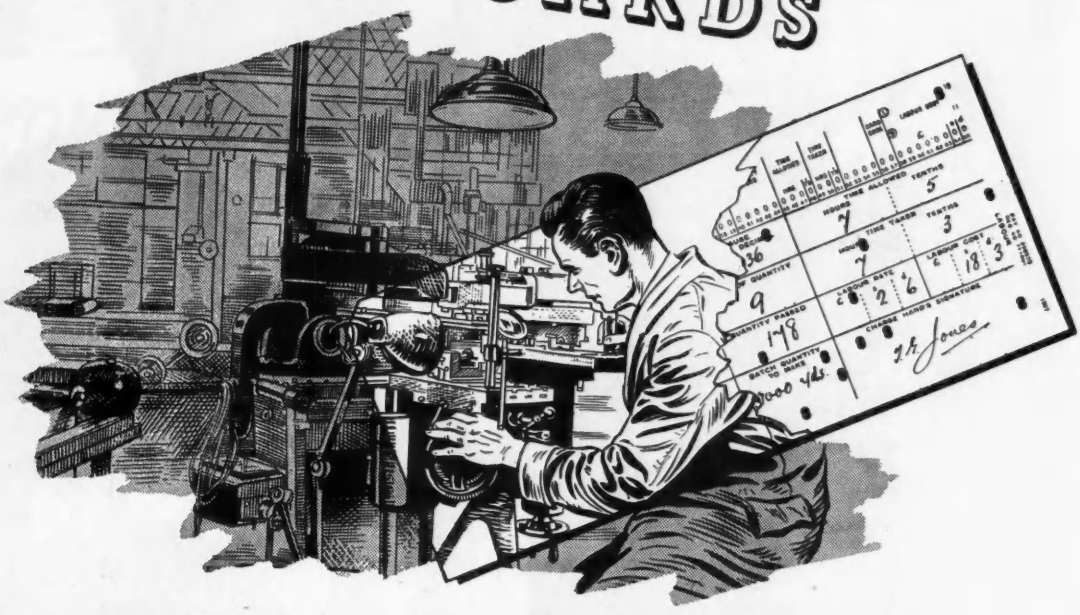

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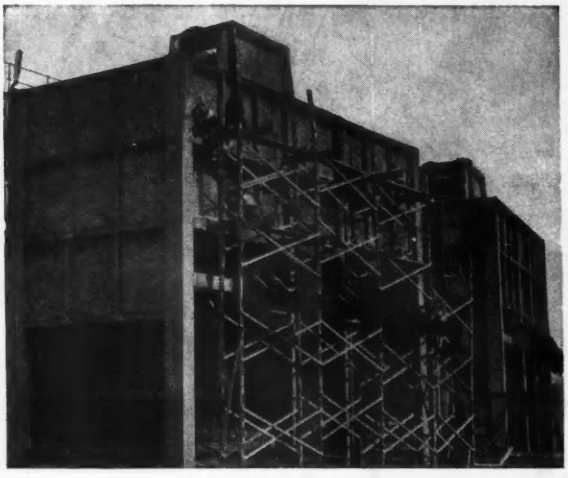

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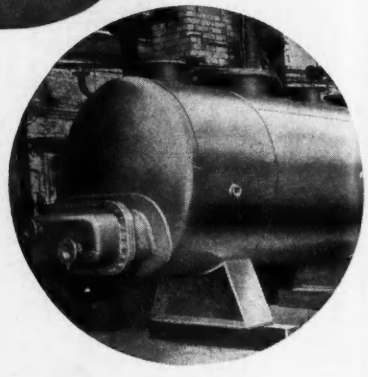

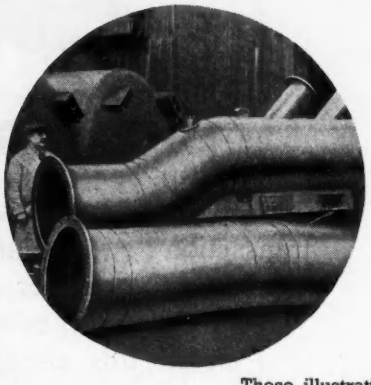

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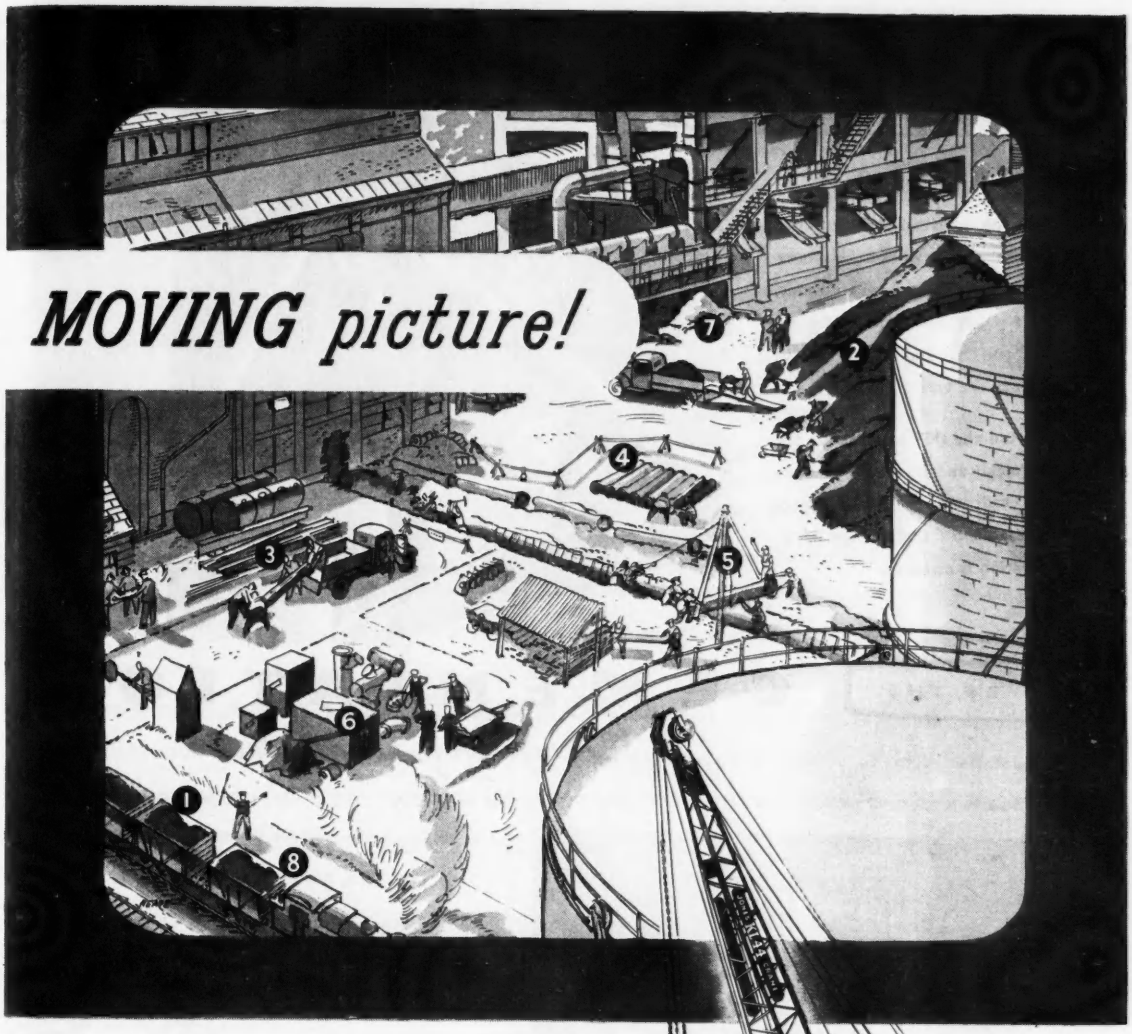

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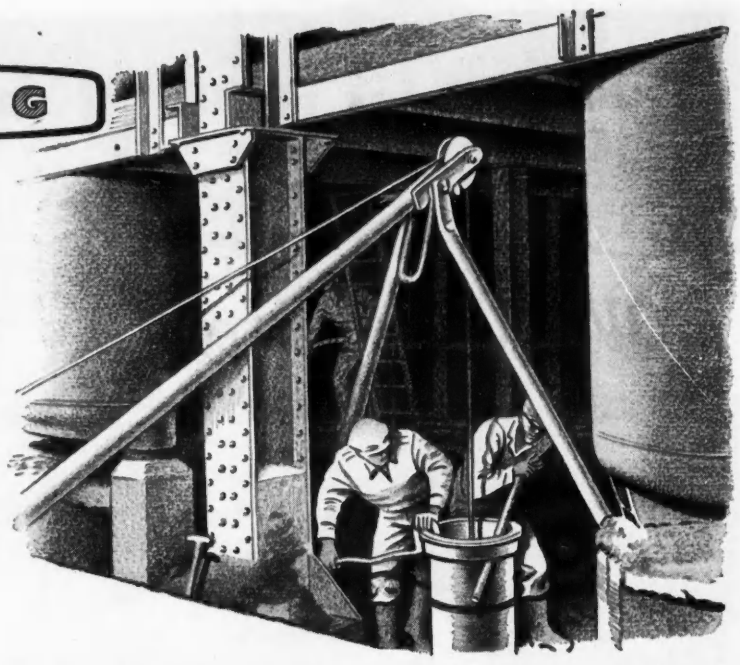

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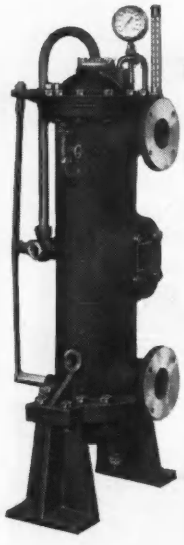

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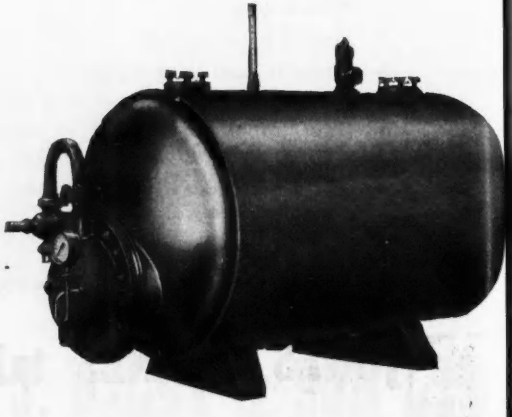

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VERTICAL WATER-TUBE HORIZONTAL GAS FLOW CONDENSERS

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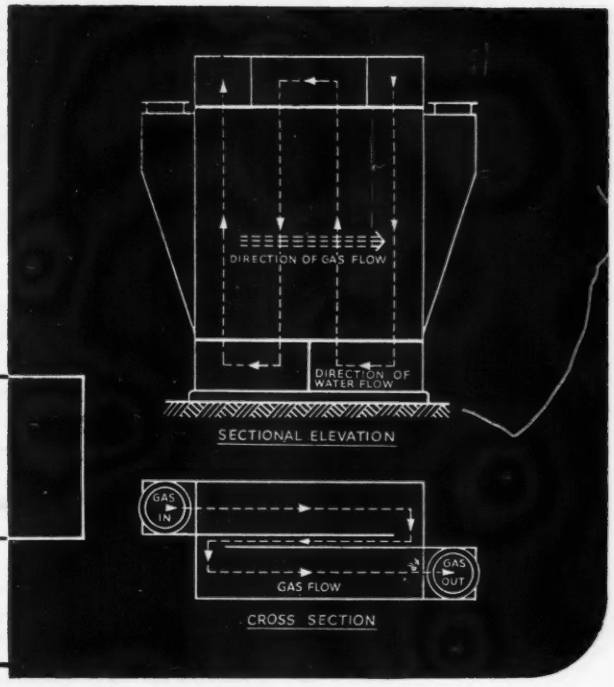
In *vertical* tube condensers internal cleaning of the tubes can be carried out during operation. Corrosion is minimised, as air released from the cooling water is automatically vented through the open tops of the tubes. Moreover, despite lower heat transfer coefficients, the simpler construction of vertical tube condensers results in lower costs for a given duty.

Whessoe *vertical tube horizontal gas flow* condensers combine the main advantages of both types. The gas flows at right angles to the tubes (as in horizontal tube condensers), thus securing a higher heat transfer coefficient, but the tubes are vertical, thus retaining the economical construction and ease of tube cleaning of vertical tube condensers.



Diagrammatic arrangement of a Whessoe vertical tube horizontal gas flow condenser.

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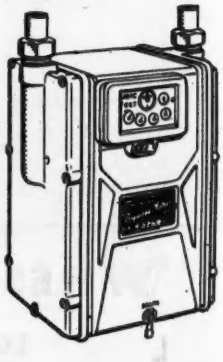

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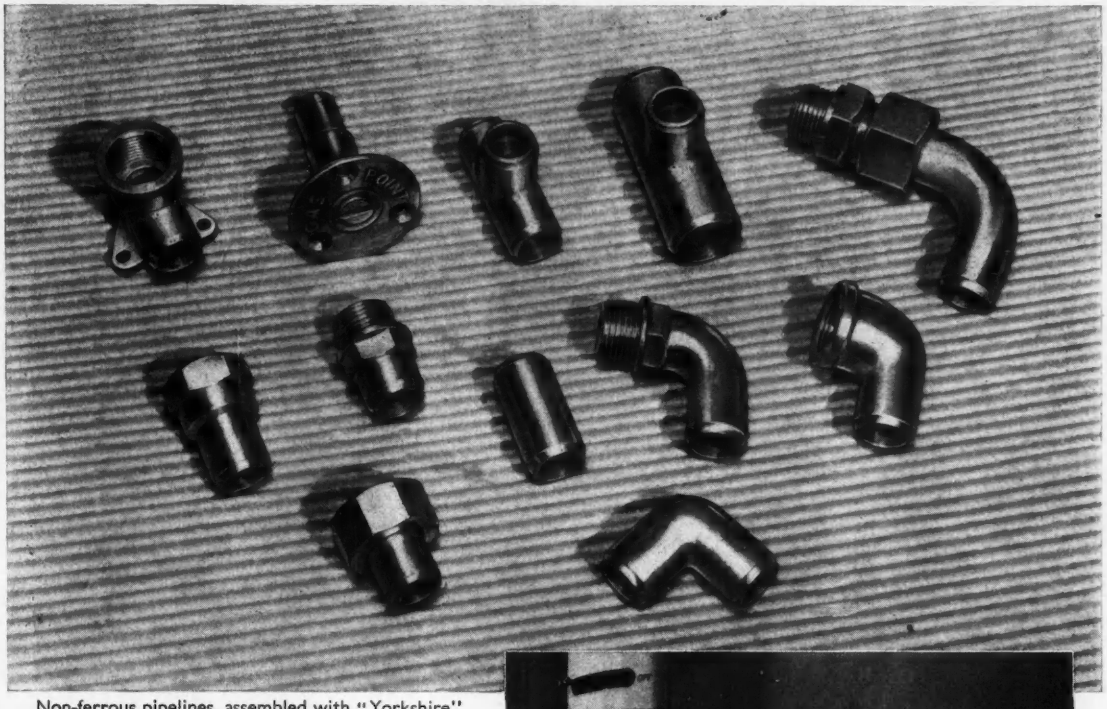

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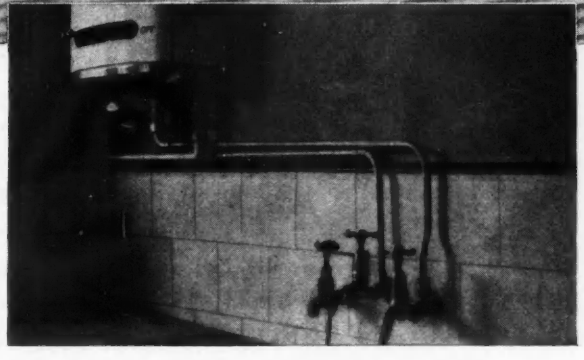

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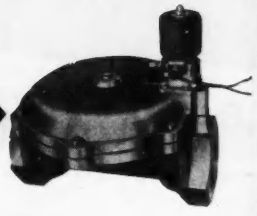

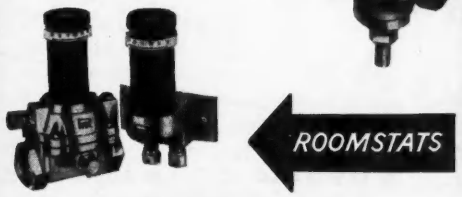

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GAS JOURNAL

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COKE MAKING AND USE

TODAY coke making cannot be, or should not be, considered as ending when the coke is discharged from the retort. Coke making, we suggest—whether the coke is produced for sale or for use in the manufacture of gas—ought to be regarded in terms of the final product. With large installations of retorts and notably of ovens, handling plant of adequate proportions and range is common enough. In small gasworks proper provision for coke treatment is all too uncommon, which means, of course, an adverse effect on sales and renders somewhat hollow talk about either 'fuel efficiency index' on the works or the virtues of a solid smokeless fuel on the district. Essentially a practical paper on one aspect of a wide subject, the contribution on 'Coke Treatment' by Mr. Robert Miller (W. J. Jenkins & Co., Ltd.) to the Wales and Monmouthshire Section of the Institution of Gas Engineers will usefully be read in conjunction with what Mr. C. A. Deas had to say to the Eastern Gas Consultative Council (last week's *Journal*).

We have the reimposition of coke rationing and all that this implies in the public's search for warmth in the home and heat in industry. Mr. Miller asks that present emergencies should not result in bad memories of a 'stop-gap' fuel. The problem, however, is a long-standing one. We realise that since the setting-up of the London and Counties Coke Association 20 years ago very great headway indeed has been made during a period of handicap upon handicap. Even so, throughout these years and for long before, coke in many areas was in fact sold as a 'stop-gap' fuel—and the public bases its opinion on its experience, not on fine words. Mr. Miller rightly insists that coke should be sold in the market as a consistent product prepared and graded according to the particular purposes for which it is to be applied, and he outlined what can be done by way of efficient handling from retort house to wagon, bag, or producer gas or water gas plant. He gave much useful information on the various types of conveyor, elevator, screen, and the like, setting out not only their advantages but also their disadvantages. And we like his emphasis on the point that 'mechanical handling systems should be regarded as a single machine, each part being geared to all other parts.' Mechanical handling systems will continue to function efficiently and economically only if they are well maintained; and there is everything to be said for the author's contention that due regard should be had to the recommendations of coke handling plant designers—advice the result of long experience, guidance designed to take care of most eventualities.

Dealing with principles rather than with plant, he showed how mechanical handling engineers solved their own problems of rising wages by improvements in design, and how, despite rising costs of steel, the cost of steel per 100 tons of coal handled was steadily reduced. Avoidance of breakages as far as possible, and ease of renewal, were stressed as underlying principles of coke treatment. The belt conveyor—'maid of all work'—gets little attention and maintenance; the author listed possible causes of reduction in belt life, most of them so familiar as to be often overlooked, and urged that time given to belt conveyor examination is time well spent and amply rewarded by increased life. The wide range of coke handling equipment was reviewed with impartiality. The gravity bucket conveyor, for instance, was given credit for being favoured by power station architects on aesthetic grounds, but was accused of a high rate of wear and tear, which contractors are striving to combat. We were told that the trend in coke bunkers is towards reinforced concrete construction, but steel-framed brick-lined bunkers have much to recommend them for capacities up to 100 tons, and they are capable of modification more easily than reinforced concrete. On the other hand, reinforced concrete maintenance is low, owing to

elimination of painting, but unlined bunker walls need regular inspection for cracks which, when found, should be suitably treated to prevent extensive damage.

We turn to Mr. Deas' talk on the coke supply position. As Coke Manager to the Eastern Gas Board, Mr. Deas naturally referred more specifically to the problems in the Board's area, but what he had to say has some general significance. On nationalisation, out of about 90 works in the area 48 had no screening plant at all, 12 had inadequate plants, and of the remaining 30 not more than 24 had modern fully-equipped plants. Scattered throughout the area 66 gas-making plants were selling coke ' more or less as made,' and whenever the local consumer or merchant could obtain correctly sized coke from another works he did so. Whenever the supply position became at all easy these smaller works found themselves embarrassed with stocking problems. Few works had tackled this aspect at all seriously; costing was haphazard. Prior to vesting date, remarked Mr. Deas, individual undertakings were not much concerned about the difficulties of works 50 or 100 miles away. Now the Board (and this can be taken as a comment covering the gas boards generally) has at least a moral responsibility to all gas coke consumers in its area, whether they use coke produced in one or other of the Board's own works or coke imported from another area. It will be agreed that the picture painted by Mr. Deas is not particularly bright. The important point is that the position is being faced and that the facts are being brought out into the open. Some of the steps envisaged to better the situation were touched upon by Mr. Deas, and we need not reiterate them. We would, however, call attention to the remarks on coke stocking—a matter which is being widely discussed today. The aim should be continuity of service, and provision should be made to meet demands varying according to the weather encountered during successive winters. Expense is, of course, involved in providing adequate stocking facilities to even out demand and supply. But it has been shown in one instance at least that a long term stocking policy can result in overall economy and consumer satisfaction; it has been demonstrated that over a period of three or four years production of coke can, by carefully planned stocking arrangements, be more nearly made to match demand, with assured benefit practically.

COMMUNITY OF INTEREST

IN neither the national nor the international field have new techniques brought peace and happiness. That was one of the views expressed by Sir Harold Hartley in the Will Harvey memorial lecture at Sheffield City Training College. Sir Harold took as his subject the place of further education in the public services, suggesting that, while technical progress has improved conditions of life immeasurably in the more advanced countries, the substitution of mechanised production for the craftsman, with his long apprenticeship, has destroyed the old stability and the old loyalties that meant so much to the individual. He maintains that the biggest problems facing the nationalised industries are those of human relations and that the answer lies in a ' continuous process of further education at all levels.' We must establish ' mutual confidence and community of interest. . . . In no other way is there an escape from the misunderstandings and mistakes that ultimately affect everyone adversely.'

In the nationalised industries there are difficulties arising from size of undertakings, scattered units, systems of control. But to our mind these problems are a matter of degree rather than of kind, and they are not in themselves new. We have only to consider the great oil organisations, the vast chemical industry of I.C.I., or, coming directly to the gas industry, the former Gas Light and Coke Company, to realise that problems of size and complexity have been grappled with to good account. In many respects the Gas Light was a pattern for an area board. Organisations of that nature and scope have achieved what otherwise could not have been accomplished; they come under private enterprise, but not, with development, under private enterprise as it is commonly understood—*i.e.*, the free untrammelled hand. We feel that within the oil organisations, within the chemical industry, there is community of interest in the pride of achievement. In both industries welfare activities have been developed to an extraordinary level and great emphasis is laid on human relations. The former Gas Light—and we are using this as an example only of pre-nationalisation days, though for many obvious reasons it is the most outstanding—enjoyed legitimate pride in its service as a gas supplier and also in what it did for its employees. Under nationalisation have such underlying conceptions gone, so to speak, ' by the board '? If they have, we shall have a very sorry gas industry.

We think that in neither the oil industry nor the chemical industry has individual initiative been stifled at birth—and it would be idle to suppose that either industry is not subject to political influence. The gas industry has now to bear with political influence, and we suppose that the question it must ask itself is to what extent it can, by encouraging individual enterprise and individual pride, rise above political whim and faction. The problem is not academic and it is most certainly with us—and in the ultimate its solution does depend, as Sir Harold Hartley suggested, on human relations, good faith, mutual trust. Since May 1, 1949, have Mr. X and Mr. Y in the gas industry, formerly grappling with common problems in friendly fashion, come to the conclusion that they are now either ciphers or at loggerheads? For better or worse nationalisation has sprung a big change in the outlook of the gas engineer: It is to be hoped that it has not destroyed or will not destroy ' loyalties '—loyalties which undoubtedly existed in the era when the gas industry had always at the tip of its tongue that all-embracing phrase the ' fetters of legislation.' The problem is one for those in high position; equally it is one for the individual concerned. The approach must be made in a spirit of confidence and trust. Nothing is to be gained by looking back enviously on a non-mechanised age.

CRISIS AND OPPORTUNITY

MR. E. H. WINCH did well to devote his Presidential Address to the Eastern Junior Gas Association at Cambridge almost entirely to the direct relationship between crisis and opportunity. The gas industry has probably never had more problems awaiting solution, nor more varied ones, than those which confront it today, but it would be wrong to imagine that the juniors of yesterday who are the seniors of today have come through without effort or anxiety. As Mr. Battersby recalled at Cambridge, the annals of the Institution of Gas Engineers as well as of the senior and junior organisations contain evidence of difficulties feared, faced, and overcome in the good (or bad ?) old times before some of the things that tend to frighten some of our juniors were even conceived. Threats of an extra penny a ton on the price of coal, a halfpenny an hour on wages, and intensified electrical competition sound trivial in 1951, but they were not so unimportant 30 years ago. In those days much attention was paid to profits in relation to their effect on the company balance sheet and the annual report of the gas committee presented to the local council under the spotlight of publicity. The call for economy has become ever more insistent, although from a changing standpoint. So long as the industry lasts, profits will be made or lost in the retort house, but that is not necessarily the only place where economies can be effected. Taking the figures given in the first report of the Gas Council Mr. Winch drew attention to a possible saving of 28 lb. of coke per 100 lb. of coal carbonised by careful attention to fuel economy on the works, although he frankly admitted a series of unavoidable factors operating against full realisation of such a saving. His major hope lay in the planning of integration schemes with carbonising units which can be maintained in operation continuously between consecutive resetting or repair periods, and with an ample proportion of water gas plant in fuel requirements. Turning to other sources of economy Mr. Winch showed that low producer fuel consumption is not an indication of retort house efficiency unless it is accompanied by a good yield of gaseous therms.

Much new carbonising plant is needed, and if the opportunity is grasped, a great deal of it can be designed in units of sufficient size to enable the maximum contribution to be made to reduction in gas production costs, overall economy in the efficient use of coal, release of additional coke for public consumption, and the national electricity problem. Other opportunities for economy exist between the works and the consumers' appliances, with special regard to design of distributing systems, reduction of unaccounted-for gas, insistence on a high standard of installation, and the best use of manpower. The industry, in Mr. Winch's view, is faced with the greatest opportunity it has had for many years to demonstrate the vital contribution it can make to the solution of those fuel crises which have been a recurrent feature of the past few winters. It is up to the juniors —the seniors of tomorrow—to realise that opportunity. There are few industries of the size and importance of ours which offer as good facilities for the young technician, but Mr. Winch, who has for many years made the education of the junior one of his special studies, did not hesitate to offer suggestions to the area boards for the further improvement of those facilities. The Eastern Junior Gas Association is now a sturdy infant of five years with a total membership of 110, 88% of whom are from stations producing over 100 mill. cu.ft. per annum. Of 103 stations which produce less than 500 mill. cu.ft., 26 provide 46 members, or 42⅛ of the total. No indication was given as to how far membership falls short of possible maximum, but the small percentage from small works was said to reflect no lack of interest but rather the conditions affecting the area, in which many stations have no technical staff at all apart from the senior official.

GAS AND THE BAKER

THE staging of the Bakers' and Confectioners' Exhibition at Olympia last week, after a gap of 13 years, served as a reminder of the changes taking place in one of our oldest-established industries. The changes are various, but the most marked is the growing incidence of the factory type of bakery whether privately owned or run by a company or co-operative society. The majority of the large bakery businesses now operating have grown from comparatively humble beginnings. They were not started as factories but grew from small family bakeries. A great deal of amalgamation has taken place and, therefore, we have today the curious state of affairs when towns are larger, bakers' shops fewer, many bakehouses have closed down, but trade is greater. In other words, the small baker is not so small as he was. Fewer bakehouses have been built, the street corner bakeries are disappearing, and bakers' shops are now almost entirely limited to shopping areas, several shops being fed by one bakery. Naturally this evolution has its effects on our own industry. Demand for small scale equipment is decreasing, and there has grown up a new type of apparatus, designed for baking on mass production lines.

The exhibition was a brave show and a resounding success. It has come a long way since the first of its kind was held in 1893, and the change to Olympia from the pre-war venue of the Agricultural Hall may be taken as evidence of its progressive trend. It occupied the National and Empire Halls, and their first floors, and throughout the exhibition's run of five days attendances were impressive. As might be expected, there have been many developments in ovens, plant and machinery since 1938 (the ill-fated 1939 show was abandoned the day before it was due to open) and exhibitors reported good business and many enquiries from visitors, many of whom were enjoying their first chance to see equipment introduced within the last 13 years. After a careful examination of the ovens on show, let us admit, frankly, that progress in the design of electric equipment has been considerable. Before the war electricity had its foot in the door of a valuable load shared by gas, oil, and solid fuel. To-day it has comfortably established itself, and thanks to improvement in technical efficiency, is providing the gas industry with some virile

competition. At the same time, gas ovens predominated at the exhibition and indicated that whether heating was required for the largest or the smallest types of equipment, gas was still the most popular fuel. A fair measure of praise must be accorded the Gas Council, whose lively stand attracted plenty of attention. Exhibits were particularly well chosen and we endorse the sponsors' emphasis on the gas-fired flue conversion set. It is significant that the somewhat meagre E.D.A. stand, placed in the gallery and thus divorced from the plant and machinery section, showed only lighting fittings, water heaters, and a delivery vehicle. There appeared to be a singular but perhaps understandable reticence to admit that bread could be baked by electricity.

SALARIES OF GAS OFFICERS

THE officers' side of the Senior Gas Officers Joint Council (which is comprised of representatives of the Gas Officers' Guild and the National Association of Local Government Officers) has decided not to seek collective settlement by negotiation of the salaries of gas officers whose total emoluments in cash and kind exceed £1,500 per annum, until such time, if at all, as it appears desirable, or necessary, to extend negotiations to all or some officers having emoluments above £1,500 per annum. Ample notice will be given of any such extension proposed. Mr. J. E. Davis, Officers' Side Secretary, informs us that this decision does not preclude the collective negotiation of any other matters of interest to officers, irrespective of the amount of emoluments received, or, on request, the individual negotiation of the salary or other affairs of any such officer.

N.B. MEETING—A CORRECTION

MR. GEORGE KEILLOR, Manager and Engineer of Airdrie District, calls attention to our error in misplacing his remarks in the left-hand column of p. 780 of the *Journal* for September 26. His contribution was to the discussion on Dr. Davidson's paper, *not* Mr. Campbell's. In extenuation of our mistake we can plead that the acoustics of the Town Hall, Ayr, were exceptionally bad, and that speakers from the lofty platform were as difficult to hear at the Press table as were those who spoke from the body of the hall. Indeed, during the somewhat acrid discussion of the new constitution of the Scottish Association, a pleasant relief was provided by the stentorian tones of Mr. Lewis Bain requesting Mr. David Fulton to speak into the 'mike'—and they two should know each other's voices by now. However, the fact remains that subsequently our reporter spent much time collecting and collating contributions to the discussions; and it offers to us the opportunity to request once again that speakers should address their audiences from the front of the hall and announce themselves by name and place.

HIGHER TECHNOLOGICAL EDUCATION

A STATEMENT of Government policy for the development of higher technological education in Great Britain just issued as a White Paper (H.M. Stationery Office, 3d.) announces that the Government has rejected for the time being any proposal to establish a technological university to cater for 2,000 to 3,000 students, either by setting up a new foundation or by expansion of some existing institution. The matter will, however, be reconsidered on its merits when the situation improves. Higher technological education is provided in 60 technical colleges in England and Wales and six in Scotland, and the Government accepts in general a recommendation of the National Advisory Council on Education for Industry and Commerce that increased financial assistance should be given to the colleges engaged in advanced technology, that new courses should be developed in technical colleges in close association with industry, and that a Royal College of Technologists should be established. It is proposed that the College of Technologists should be responsible for the granting of awards of associateship, etc., designed to encourage technical college students to take appropriate courses in higher technology. A Royal Charter is to be sought, but it is not intended at the present juncture to ask that it should be given the right to use the title 'Royal', nor for the present will the college have any other responsibilities than the granting of awards and the approval of courses.

Importance is attached to the avoidance of overlapping and dispersal of effort by continuing close liaison between the University Grants Committee, the education departments, and the College of Technologists when it is set up. The Government, after weighing carefully the many views expressed, is convinced that development along these lines will be in accordance with national needs and also with those of the various interests concerned, and hopes to have the co-operation of all concerned in guiding the next stage of development along these lines.

INDUSTRY'S CAPITAL NEEDS

IN his address to the shareholders at the annual meeting of the General Electric Company the Chairman, Sir Harry Railing, made some forthright comments on the Government's failure to recognise the necessity of providing, early enough, sufficient capital for electricity supply. The present position of the electricity supply industry, he observed, was a perfect example of the need for sufficient capital resources—a need which industry generally faced owing to the weight of taxation on retained profits. On these profits the life blood of industry depends; without them industry must wither and decay. There is a point beyond which any further taxation of industry does not reduce, but accelerates, inflation. This point is reached when individuals or corporations are no longer left with any inducement to save and invest—and they therefore live on capital. This way can only lead to catastrophe. History has shown that when too much responsibility is transferred from the individual to bigger units or to the State, the individual loses his sense of responsibility for both expenditure and ultimate results. This point, in Sir Harry Railing's opinion, has now been definitely reached.

Undistributed corporation profits have of late constituted Britain's prime method of saving. The heavy burden of taxation on undistributed profits constitutes a capital levy on savings, and since it taxes profits without allowing for the increased cost of replacement of stock and fixed assets the capital assets available for maintaining efficient production are drastically curtailed. The dividend standstill now proposed reduces the possibility of attracting outside savings for this purpose and for expansion and new ventures. Where, then, asks Sir Harry Railing, is capital to come from? What is going to happen to us if industry has neither the means nor the inducement to remain efficient and competitive while the industries of other countries are in a position to do so? The necessity to provide adequate working capital for industry far transcends in importance any other national demands, apart from that for defence.

UNDUE MODESTY?

LADY NUNBURNHOLME was perhaps flogging a dead—or at any rate very nearly dead—horse when she spoke at the last meeting of the North Thames Gas Consultative Council, held just three days prior to the closing of the South Bank Festival exhibition, of what she described as the gas industry's poor showing at that exhibition. Her criticisms appeared to be directed principally at the absence of an all-gas kitchen in the Homes and Gardens section. At the time of our original review of the industry's contribution to the exhibition (as distinct from its part in the heating of the Royal Festival Hall and the catering generally) we felt that any criticism should rather be levelled at the poor showing on the 'manufacturing' side and that we were not badly represented in the domestic section. Recriminations and post mortems at this stage will not help anyone—save possibly to guide those responsible for any nationally-inspired exhibition of a similar kind in the future—though as regards the industry's effort at the next Festival exhibition (if any) in the year 2051 we daresay that the majority of us will be content to leave it to posterity with the feeling that we 'couldn't care less!'

It was a little unfortunate that on the occasion of Lady Nunburnholme's visit she should have found the Gas Council representative in retiring mood sitting, as she remarked, 'behind an enormous electric kettle.' We assume that her ladyship's contention is that if our industry's representative desired some means of self-effacement he should at least have been provided with a suitable gas appliance behind which he could modestly retire for an occasional forty winks.

To pass to another topic arising from the proceedings of the North Thames Consultative Council, we believe our comment in our report of the previous meeting regarding the difficulty the Press has in following discussions on local committee minutes, through not having access to such minutes at the time, was duly noted. If the minutes of district committees are sacrosanct (though we see no logical reason why they should be since the Press may apparently report on matters arising), then we consider that at least they should be available *during the discussion* —even if they have to be chained to the table to prevent the wolves of the Press making off with them. It is of little advantage to be permitted a glimpse of them afterwards to clear up abstruse points. It wastes the time of both the Press and the Council Secretary if lengthy explanations have to be given by the latter at the close of the meeting.

Letter to the Editor

LANGUAGE DIFFICULTIES

DEAR SIR,—Your review on p. 774 of the *Journal* of September 26 about the 'Gas Industry Vocabulary' in six languages drew my special attention.

As there are at least 25 languages in Europe and hundreds more in the rest of the world, it is evident that a book of this description, while being a great help, is not a solution of the language problem.

It is of interest to know that some 60 years ago a Mr. L. L. Zamenhof published a practical solution to the problem, an international auxiliary language Esperanto. If this had been adopted in all countries as a second language, as was intended, there would have been very little language problem today.

I have experienced its use since the last war, at four great international congresses for general use, and as a medium for scientific lectures and discussions; and in capable hands it is equal to any situation.

There are possibly a million people in the world today who understand Esperanto. It has a growing literature, magazines, is used on the radio, for correspondence, etc., but its general adoption as a neutral second language seems still to belong to the future. I wonder why?

Yours truly,

J. BROWNLEE,
ASSOC.M.INST.GAS E.

8, Westbourne Grove,
Hexham, Northumberland.
October 2, 1951.

Diary

Oct. 11.—North Western Gas Consultative Council: Midland Hotel, Manchester, 2.30 p.m.

Oct. 11.—Institute of Fuel (North Western Section): 'Boilers,' H. E. Partridge. Radiant House, Bold Street, Liverpool, 2.30 p.m.

Oct. 12.—London and Southern Junior Gas Association: 'Horizontal Retort Stoking Machine Operation,' K. L. Clark (Associate Member), W. J. Jenkins & Co., Ltd. North Thames Gas Board Offices, Edgware Road, 6.30 p.m.

Oct. 13.—Wales and Monmouthshire Junior Gas Association (North Wales Section): Chairman's Day, Rhyl; Chairman's Address, J. Woodcock (Colwyn Bay), 2.30 p.m.

Oct. 16.—Institute of Fuel: Melchett Lecture by Professor F. H. Garner. Institution of Mechanical Engineers, Storey's Gate, St. James's Park, 5.30 p.m.

Oct. 16.—Institute of Fuel (Midland Section): Chairman's Address, C. Machon. James Watt Institute, Great Charles Street, Birmingham, 6 p.m.

Oct. 17.—Institution of Gas Engineers (South Western Section): Annual General Meeting, Taunton.

Oct. 17.—Scottish Gas Consultative Council: Caledonian Hotel, Edinburgh, 11.15 a.m.

Oct. 17.—National Smoke Abatement Society and Institute of Fuel (North Western Section): Joint Meeting, 'Collection of Dust from Flue Gases,' J. C. Cleeves. Engineers' Club, Manchester, 2 p.m.

Oct. 18.—Institute of Fuel (East Midlands Section): Film Evening. Gas Showrooms, Nottingham, 6.15 p.m.

Oct. 18.—Institute of Fuel (Midland Section) and Institution of Heating and Ventilating Engineers: Joint Meeting. 'The Pimlico District Heating Scheme,' A. E. Margolis. Imperial Hotel, Temple Street, Birmingham, 6.30 p.m.

Oct. 19.—Scottish Junior Gas Association (Western District): 'Industrial Relations,' C. Murdoch, J.P. (Scottish Gas Board). Royal Technical College, Glasgow.

Oct. 23-26.—Dairy Show, Olympia. Gas Council exhibit.

Oct. 23.—Midland Junior Gas Association: 'The Use of Producer Gas for Peak Load Outputs,' D. J. Ward, Birmingham. Staff Mess Room, West Midlands Gas Board, Birmingham.

Oct. 24.—Institute of Fuel (North Western Section): Visit to John Summers and Sons, Ltd., Hawarden Bridge Steel Works, Shotton.

Oct. 24—Institution of Gas Engineers and Coke Oven Managers' Association: Joint Meeting. 'Recent Researches in Carbonisation,' W. Idris Jones, B.SC., PH.D., Director General, Scientific Department, National Coal Board. Waldorf Hotel, Aldwych, 2.45 p.m.

Oct. 26.—Institution of Gas Engineers (Manchester and District Section): Ordinary General Meeting, Manchester.

Personal

A portrait of the late **Alderman W. Sharp,** wearing his Lord Mayor's robes, has been unveiled in the Hyson Green factory, Nottingham, of the Metropolitan Gas Meter Co., where he worked as a metal worker. Alderman Sharp's widow attended the unveiling ceremony.

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Mr. Charles B. S. Mitchell, District Manager, Ayr, has been appointed by the Scottish Gas Board to the position of Deputy Group Manager, Kilmarnock group. The Kilmarnock group comprises 27 gasworks in the South West of Scotland and its headquarters are at Kilmarnock. Management of the Ayr and Newton-on-Ayr undertaking is being merged, and **Mr. C. E. N. Freshney,** District Manager, Newton-on-Ayr, will be responsible for both undertakings. **Mr. David Philp,** Assistant District Manager, Newton-on-Ayr, is being transferred to the Ayr works and will be responsible for production there.

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Mr. John Denham, Manager of the Whitehaven unit of the Workington Division of the Northern Gas Board, retired on September 29. Mr. Denham was Engineer and Manager of the former Whitehaven United Gas Company for 31 years and was a Director of the Company at vesting date. Previously, Mr. Denham was Assistant Manager of the Brighouse Corporation undertaking, where he commenced his career in the gas industry 52 years ago. As a mark of appreciation the staff and workmen of the Whitehaven unit presented him with a fountain pen and pencil. Mr. Denham is succeeded by **Mr. E. Jackson,** who has been technical assistant at Whitehaven for the last five years.

Dr. E. C. Rollason, M.SC., PH.D., F.I.M., formerly a delegate director and research manager of Murex Welding Processes, Ltd., took up his appointment to the Henry Bell Wortley Chair of Metallurgy at Liverpool University on October 1. On leaving the Company he was presented with an inscribed silver salver on behalf of the staff by Lt.-Col. J. F. Todhunter, general manager. Dr. Rollason is to be succeeded in the position of Murex research manager by **Dr. W. I. Pumphrey,** M.SC., PH.D., F.R.S.A.

Obituary

Mr. Walter Brooks, a salesman and buyer for the East Midlands Gas Board, died suddenly on September 28 at his home at Grantham. He had earlier in the day attended a sales conference at Boston and he appeared to be in normal health when he returned home, but he died during the night. He had been for over 22 years with the East Midlands Gas Board and its predecessors, the Grantham Gas Company, and he was 61 years old.

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Mr. Reginald J. Rew, for many years Managing Director of the Devon Gas Association prior to nationalisation, died at Exeter on October 1. In 1928 he handed over the duties of Engineer to his son, Mr. Ronald F. Rew, while still retaining his position as Managing Director. A few years later the younger Mr. Rew became General Manager, Mr. Reginald Rew remaining in office until the 12 undertakings belonging to the Devon Gas Association became vested in the South Western Gas Board in 1949.

PARTIES and POLICIES

We pick out from the election manifestos of the two principal political parties a few points which relate, directly or indirectly, to the wellbeing of industry in general and gas industry in particular

CONSERVATIVE

THERE are many ways in which industry can become more efficient—more horse-power behind each worker; the quality and quick delivery of raw materials; better use of machinery; an all-pervading spirit of competition stimulating managements, technical staffs, and workers alike in rooting out inefficiency; incentives both financial and non-financial; a high level of research both by individual firms and by scientific bodies; the general interchange of technical knowledge; and, above all, continuous hard work by each individual.

The re-organisation of the nationalised industries should mean goods and services available in greater quantities at lower cost. The main charge against Socialism is that it has put political and party doctrine in front of Britain's interests. That we shall never do. We have accordingly carried out a close examination of each of the nationalised industries to see how best and how soon we can enable them to operate with maximum efficiency.

In gas and electricity, as in other nationalised industries, excessive centralisation has fettered local initiative and autonomy and has caused unnecessary delay, and duplication of staff and expenditure. The former system of a Central Electricity Board and Electricity Commissioners should be restored and immediate consideration should be given to a scheme for decentralising control of generation. In both gas and electricity municipalities and private enterprise should have the opportunity to put forward their claim to re-enter the field.

The industries remaining nationalised must observe the standards of the Workers' Charter and will come within the purview of the Monopolies Commission. Public control will also be extended by stricter Parliamentary review.

LABOUR

WE shall do everything possible to stimulate production at home and to expand our exports. We shall press on with the development of new sources of raw materials, particularly within the Commonwealth.

We shall attack monopolies and combines which restrict production and keep prices and profits too high. We shall prohibit by law the withholding of supplies to traders who bring prices down. We shall take over concerns which fail the nation and start new public enterprises wherever this will serve the national interest. We shall help industry with scientific and technical aid.

We shall establish development councils, by compulsion if necessary, wherever this will help industrial efficiency. We shall associate the workers more closely with the administration of public industries and services.

We shall further extend electricity and water supplies and sewerage in rural areas.

As soon as tax reductions become possible, we shall still further reduce taxation of wages, salaries, and moderate inheritances. We shall also take steps to abolish the differences between the payment of men and women in the public services. On the other hand we shall limit dividends by law, increase taxation on the small minority who own great fortunes and large unearned incomes and take measures to prevent large capital gains. The Tories suggest 'some sort of excess profits tax.' In the interests of the nation Labour would stop all excess profits.

AVENUE COKING PLANT . . .

Woodall-Duckham Companies Get £4,750,000 Contract in N.C.B.'s New Carbonisation Scheme near Chesterfield

Last Wednesday, standing behind a scale model of the plant, and flanked by representatives of the N.C.B. and of the Woodall-Duckham Companies, Sir Hubert Houldsworth formally handed to Mr. T. Campbell Finlayson the order for the N.C.B.'s biggest coking plant. To be known as the Avenue Coking Plant, it is to be built at Wingerworth, three miles south of Chesterfield, in the East Midlands Coal Division

IN preparing their designs for this important project, the Board have not only drawn to the fullest extent on British operational and research experience, but have incorporated the latest features of American and German developments which are applicable to carbonisation practice in this country. The Woodall-Duckham Company are undertaking the greater part of the work. The main order placed with this company amounts to £4,750,000 out of a total estimated capital cost of about £8,000,000. This is the largest single contract placed by the Board since the nationalisation of the industry in 1947.

The installation will consist of 106 ovens and will carbonise more than three quarters of a million tons of coal a year, producing half a million tons of coke. The gas will be sold to the gas industry for local distribution. In addition to extensive coal blending facilities and the normal primary by-product plant associated with modern carbonisation practice, Avenue will have a benzole rectifying plant, tar distilling plant, gas purifying equipment and a sulphuric acid plant. About 3 mill. gal. of crude benzole and 6 mill. gal. of crude tar will be produced annually.

Many of the coking plants taken over by the Board in 1947 were in poor condition and virtually obsolete, and the new undertaking involves the replacement of smaller, out-of-date units. Despite the age and condition of the smaller plants, however, the Board have succeeded in maintaining their output of coke during the past five years. The new project forms part of the Board's extensive programme for developing their carbonisation activity and will, together with new capital such as that at the Nantgarw plant in South Wales, make a major contribution to the national economy.

In acknowledging Sir Hubert's comments, Mr. Finlayson stressed the major necessity of keeping down capital costs and designing for low operating charges. He added the interesting information that at Avenue his Company expected to use 7,500 tons of cement; 21,000 tons of iron and steel; 18,000 tons of refractories; and 2½ mill. building bricks. They would construct 2½ miles of conveyor, 14 miles of railway, and two miles of road. Probably £600,000 in wages would be paid out on the site.

Mr. T. Campbell Finlayson receives the order from Sir Hubert Houldsworth, Chairman of National Coal Board.

Sewage Sludge Gas at 1s. 9d. per 1,000 cu.ft. may be pumped from the Airdrie Town Council's sewage works to the local gasworks if present plans mature. A 2 in. pipe would be laid for the purpose of conveying some 2 mill. cu.ft. annually.

An Ascot Tour.—Mr. F. M. Taylor, of Ascot Gas Water Heaters, Ltd., has just returned from a three day tour of the South Western Gas Board area. Lectures were held at Bath, Swindon, and Weston-super-Mare and were attended by branch superintendents, inspectors, and fitters. The subject of the lectures was the modification in design and new features of the Ascot 709 multipoint and the 503 range of small heaters. At each lecture question time produced several points for discussion.

Paint Curing by Gas.—In our issue of September 5 (p. 569) we published extracts from an Industrial Gas Development Committee report on a North Thames Gas Board installation for curing paint on pressed hinges at the London Pressed Hinge Co., Ltd., Plaistow Road, E.15. We have just been informed that an error was made in the report, in that the tunnel employed in the process was made by Neil & Spencer, Ltd., of Station Road, Leatherhead, and not by Matthew Hall & Co., Ltd.

Purchasing Officers' Association.—Mr. T. L. Garner (Precision Rubbers, Ltd.) has been elected President of the Purchasing Officers' Association for 1951-52, with Mr. H. W. King (Eburite Corrugated Containers, Ltd.) as Chairman; Mr. F. J. White (Chance Brothers, Ltd.) as Vice-Chairman; and Mr. R. J. Mitchell (Morgan Crucible Co., Ltd.) as Hon. Treasurer). Among the Vice-Presidents are Mr. J. C. Thompson (Edgar Allen & Co., Ltd.), and Mr. D. Wragg (Thomas Firth & John Brown, Ltd.).

Dundee Town Council has alleged that gas cookers owned privately by tenants in housing schemes are being sold and applications made by these tenants for free cookers from the Corporation. According to information given at Dundee Town Council, Scottish Gas Board representatives were encouraging tenants to do this on the grounds that failure to do so would mean that the tenant must maintain his own privately owned cooker. If he sold and forced the Corporation to replace with a new cooker, onus for maintenance fell on the local authority. According to the Town Clerk Deputy, the Corporation had some time ago authorised replacement of cookers. Instead of waiting for tenants to approach the Board, the Board appeared to be contacting tenants and proposing disposal of privately owned cookers to secure free replacements. The matter is to be discussed at the next meeting of the Council.

EASTERN JUNIORS' PRESIDENTIAL MEETING

Members of the Eastern Junior Gas Association, with their ladies, were the guests of the Eastern Gas Board at the luncheon following the 'Presidential Meeting' at Cambridge on September 29. The top table includes Mr. and Mrs. T. C. Battersby (Watford), Mr. and Mrs. J. Hunter Rioch (Cambridge), Mr. R. H. Epps (Secretary of the Eastern Gas Board) and Mrs. Epps, the President and Mrs. E. H. Winch, and the Hon. Secretary, Mr. H. R. Hilham (Colchester).

LONG SERVICE ASSOCIATION VISITS BRIGHTON

On Saturday, September 29, 104 members of the London Group Long Service Association of Parkinson and Cowan (Gas Meters), Ltd., spent a happy day by the sea at Brighton. It is significant that the average years of service of these old timers amounted to no less than 37 each, while 15 of the members had more than 50 years' service with the Company. Lunch for the party was served at the Old Ship Hotel, after which long service medals were presented, and the function ended with half-an-hour's sing-song led by Jack Sullivan, himself an old timer of the music hall. Within the Parkinson and Cowan Group similar associations operate at all their main manufacturing centres, and the Company finds that these regular gatherings engender a very real spirit of comradeship among its people.

A PRIZEWINNING LORRY

The Barry undertaking of the Wales Gas Board entered this lorry for the Barry Carnival of 1951. It won the first prize in the trades class of 19 exhibits. The entry was developed on the popular radio programme 'Housewives' Choice.' The 1840 New World cream cooker was rotated on an imitation gramophone turntable by two junior members of the staff, concealed in the pylon. The lettering on the sides of the lorry and over the top of the cooker was bright red, and the flowers were geranium, lobelia, etc. In addition to the 1840 the lorry carried two 509 green and cream cookers, and a 970 Dean cream washing machine. The procession, which was two miles in length, was watched by over 60,000 people from all over South Wales and the Midlands.

Shape of Things to Come?

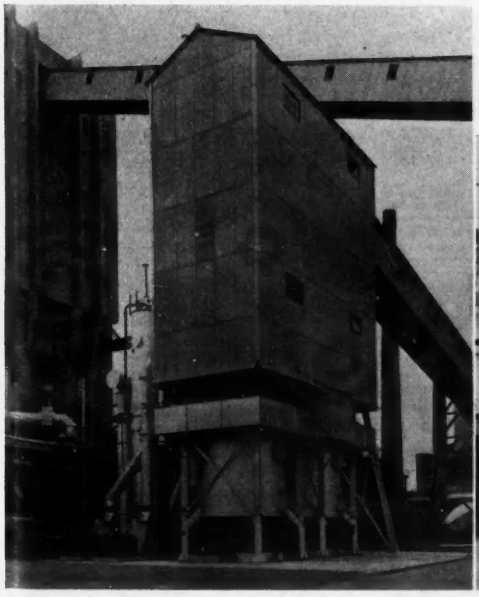
Visitors to the Leeds Brighter Homes Exhibition, September 11-22, saw the unusual sight of the three competitive fuel industries—*i.e.*, solid fuel, gas, and electricity, represented side by side under one roof, in an integrated display. The North Eastern Gas Board, Yorkshire Electricity Board, and the N.E. Regional Branch of the Coal Utilisation Council had collaborated with the West Riding of Yorkshire Smoke Abatement Committee in the staging of a smoke abatement exhibit.

The theme of smoke abatement was illustrated by photo enlargements of the City of Leeds, with and without smoke the smokeless photograph having been taken during the general strike of 1926, when owing to the almost complete absence of fuel, the usual smoke-laden atmosphere became significantly clear. Documentary copy panels were used to expound the theme.

The title of the exhibit was 'Let's Clear the Air!' The display was arranged in three sections—cooking, space-heating and water-heating—in each of which were exhibited appropriate gas, electrical appliances, and the new types of appliances for burning smokeless solid fuels. The opportunity was taken to distribute appropriate Gas Council publications, such as 'More Sunlight for Britain,' 'Health in the Home' and 'Mr. Therm Clears the Air.'

Change of Address.—G. L. Howarth & Co., Ltd., manufacturers of the 'Rapid' gas heated washing machine, advise us that their address is now Nelson Square, Burnley.

FURTHER VIEWS OF NANTGARW PLANT



On the left are the gas producers and (below) the exhausters at the Nantgarw coke oven plant—both provided by the Power Gas Corporation, Ltd.

CONSULTATIVE COUNCILS IN SESSION

Facilities for Paying Accounts

FACILITIES for the payment of gas accounts through banks formed one of the principal subjects of discussion at the meeting of the North Thames Consultative Council held at the Westminster City Hall on September 27 under the chairmanship of Councillor E. Bayliss.

For some time before nationalisation local branches of one of the joint stock banks provided such facilities in certain areas of the Gas Light and Coke Company. This bank had agreed to continue until 1952 the arrangements in force at vesting date, but refused to extend them to branches at which they were not in operation at vesting date. Members of the council expressed concern at implied withdrawal of these facilities next year and discussed means for providing a substitute. One suggestion was that accounts might be paid at either gas or electricity showrooms, whichever was the more convenient to the individual consumer.

It was agreed to ask the Minister to bring this matter before the committee for the co-ordination of gas and electricity services, though there was doubt in the minds of some members whether a sufficiently large number of consumers availed themselves of such facilities to warrant any pressure on the banks to provide a service for which they made a charge in respect of each account so paid.

The members were presented with the figures for gas sold by the North Thames Board during the June quarter, which were as follows:

North Thames Gas Consultative Council District	Domestic	Non-Domestic	Public Street Lighting	Total
	Therms	Therms	Therms	Therms
Berkshire & Buckinghamshire group	3,275,560 (=64·2%)	1,807,929 (=35·4%)	21,508 (=0·4%)	5,104,997
Middlesex & Surrey group	18,356,676 (=63·8%)	10,109,224 (=35·1%)	312,036 (=1·1%)	28,777,936
Metropolitan group	22,092,712 (=47·7%)	23,674,306 (=51·2%)	497,238 (=1·1%)	46,264,256
Essex group	14,042,716 (=68·7%)	6,271,310 (=30·7%)	113,226 (=0·6%)	20,427,252
TOTAL	57,767,664 (=57·4%)	41,862,769 (=41·6%)	944,008 (=1·0%)	100,574,441

The above figures have not been adjusted for gas burnt after meter readings.

Distribution of Report

The question of giving additional publicity to the consultative council's annual report by wider distribution to local authorities was also discussed. The report would be published as part of the Gas Board's own report, and it was felt that extra copies of the council's report could easily be printed separately.

The matter had been referred to the Ministry, who had replied that councils must make their own arrangements with the Stationery Office for any such extra printing. Estimates obtained from the Stationery Office showed that although the type would presumably be standing (as part of the Gas Board's report) extra copies would cost as much as 6d. each for only a four-page report and 9d. each for a six-page report. It was agreed to ask the North Thames Gas Board if it was prepared to pay for 500 copies, which would meet the council's requirements for distribution throughout the area.

The remainder of the meeting was taken up in the main with considering consumers' complaints, most of which had already been satisfactorily settled by correspondence. In one instance, however, a consumer has availed himself of his statutory right to present his complaint by personal appearance before the council, which is expected to take place at the next meeting. This is possibly the first time such a right has been exercised before a gas consultative council, and the case should consequently arouse some public interest.

A lady member of the council recounted a personal experience a few days previously at the Ealing showrooms of the Board. She overheard a consumer enquiring for a certain type of portable gas fire. The showroom attendant regretted that there were no more of this particular type in stock, but the consumer could get one at an ironmonger's down the road, who had plenty of them. The council member considered it wrong that a gas showroom should be out of stock of a popular make of appliance—particularly when a local ironmonger (who was also, incidentally, an agent of the Board) had plenty available. Surely it would have been better for the Ealing showroom to 'phone another showroom to try to get what the consumer wanted. The chairman promised to look into this point.

The meeting concluded with a comment by Lady Nunburnholme on the very poor showing which the gas industry had among the exhibits at the South Bank homes and gardens section. There was, she said, not a single gas kitchen and although there was a representative of the Gas Council in attendance he was 'sitting behind an enormous electric kettle!'

The next meeting will be held at the Westminster City Hall on Thursday, November 1.

PRICE UNIFORMITY AND DISCOUNTS

THE main discussion at a meeting of the Southern Gas Consultative Council, held at Reading on September 19 under the chairmanship of Alderman J. W. Moore (Bournemouth), was on the question of price uniformity and of discounts for certain customers. The subject of discounts arose out of correspondence with Brigadier R. S. Rothwell, of the Red Lodge, Crowthorne, Berks, which the Chairman said was typical of other letters which had been received.

Brigadier Rothwell complained that no discount was being allowed him for the use of gas for central heating purposes. He stated that he would not have installed such heating had he not been offered preferential terms by the old Yorktown and Camberley Gas Company. Now the Southern Gas Board had decided not to give discounts, yet in the Guildford area, only 17 miles away from him, the South Eastern Board were allowing such discounts. He calculated that his gas bill would be increased by about 70% as a result of the decision.

Letters written by Mr. F. G. Symons, Divisional Manager, Mr. Owen Guard, Chairman of the Southern Gas Board, and the Chairman of the Consultative Council, were also read, these being in reply to further letters from Brigadier Rothwell. The Chairman remarked that in the end Mr. Symons visited the Brigadier and explained the reasons for the Board's decision not to allow discounts, and the Brigadier was now apparently satisfied.

Less than Cost Price

Alderman Moore told the Council that when the new tariffs were fixed, to which the Council had agreed, all discounts were discontinued. It was correct to say that had these discounts been continued, and they were far more numerous than most of them had realised, then the price per therm would have had to be increased considerably. It was an undisputed fact that discounts allowed to some of these people, who were quite small consumers, meant that they were being supplied with gas at less than cost price. All those who had had any association with business knew that the larger purchaser of goods paid a lower rate than those who only purchased small quantities. He did not think any of them could countenance that some people should be subsidised at the expense of the general public, whether it was gas or any other commodity. Before vesting day there were a very large number of different tariffs in the Southern Board area, and they were now working with the idea of eventually having a standard rate throughout the whole area. They had not been able to get there yet, as the cost of production varied so much in the different divisions of the area.

Colonel G. P. Durham (Portsmouth) asked if the industrialist members of the

Reading Chamber of Commerce were now satisfied with the position.

The Chairman replied that they had, at any rate, ceased to correspond on the matter. Mr. Neil Gardiner, a member of the Council, met the Reading Chamber of Commerce, and explained the position to them. As the correspondence had now ceased, he took it that they were satisfied.

Colonel Durham said the case which the Reading Chamber of Commerce appeared to be fighting was that industry in Reading was having to pay more for its gas than it did before nationalisation, while in other parts of the country there had been no such increase. He thought they felt, 'Here is a nationalised industry; why is one part of the country penalised with increases when others are not?'

The Chairman remarked that the price of coal was very much higher delivered to the south than it was delivered to other parts of the country.

Colonel Durham replied that that might be. But the cost of delivery of petrol differed for various parts of the country, yet the price was the same in Portsmouth as it was all over the country. Surely what they had to aim at was a uniform price for gas, whether it was Aberdeen or Land's End. He thought the gas industry would have to do this, otherwise electricity charges would be uniform throughout the country and the gas industry would suffer accordingly.

Mr. Gardiner said while he did not think it a practical proposition to have a uniform price throughout the country, the correspondence showed a difference in price policy as between area and area. Gas was a nationalised industry, so surely there could be co-ordination in the policy of price fixing. By that he did not mean a uniform price throughout the country. But he thought it wrong that a neighbouring board should have a policy whereby they allowed discounts, whereas the Southern Board did not. He moved a resolution to the effect that there should be some co-ordination of price fixing policies on a national level. The resolution was carried.

South Eastern Still Bar Public

MEETING at the Old Ship Hotel, Brighton, on October 2, the South Eastern Gas Consultative Council considered a complaint relating to consumers' responsibility for the Board's meters and fittings, and it was reported that the Board was considering some modification to the wording of a clause in agreements for the supply of gas covering the matter.

A further communication had been received from the Board with regard to the expenditure involved in the reconstruction of the Park Lane showroom, Croydon, and the Council agreed to support the Board's policy.

Information had been supplied by the Board as to its policy in connection with consumers' deposits held as security for payment of accounts, and the Council recorded that in general the Board's arrangement were reasonable and satisfactory.

In the interests of publicity the Council decided to ask the Board to pursue the matter of inclusion of some reference to consultative councils and their work in films approved by the Gas Council for public display. On the question of uniformity of price, a resolution was adopted in favour of ultimate uniformity of price for gas supplied within the Board's area, and that such an objective should be pursued by the Board on gradual lines. With regard to shortage of shillings it was agreed that no further action should be taken failing difficulties arising in any particular area, which could not be dealt with by the local district committee.

It was agreed to seek the Board's observations as to the desirability of establishing some recognised period of years in the life of a meter, after which a test should be made, and if necessary, the meter exchanged without liability to or request from a consumer.

Further consideration was given to the question of admitting the public to meetings of the Council, and it was agreed that for the time being circumstances did not warrant the adoption of this policy.

Application had been received for representation on district committees of the hotel and catering industry through the British Hotels and Caterers' Association. It was agreed that when the next annual elections took place, this matter might be considered and in the meantime representation was at least implied through ordinary trade organisations.

Somerset Integration

AT a meeting of the Taunton local committee of the South Western Gas Consultative Council on October 5 (Mr. H. D. Brooks, J.P., the Chairman, presiding), Mr. L. P. Ingram, deputy general manager of the Board, said that since the previous meeting he had met members of the Chard Borough Council, and he thought that as a result there was a better understanding of each other's problems. He said that progress was being made in connecting Wellington to Taunton, but in view of the uncertainty of the delivery of pipes it was not possible to predict with accuracy the date when the main would be completed.

In connection with the future closing of the Wellington works, Councillor Mrs. Nott asked what would be the position regarding coke supplies which had been available locally. Mr. Ingram said that an equivalent quantity to that usually available at Wellington would be sent from the Taunton works. With regard to the coke position generally, Mr. Ingram said that there had been much heavier demands during the recent summer months than in previous years, and in the Taunton sub-division stocks in hand were two thousand tons less than at the same time last year. The assumption was that consumers had been accumulating reserves of fuel and if this was the case it would ease the position.

The committee agreed with the view of the consultative council that the South Western Gas Board should maintain a standard of showroom display in keeping with modern practice, and appreciative comments were made regarding the Crewkerne premises.

In referring to protests that had reached the consultative council about recent increases in gas prices, Councillor Loveys pointed out that such increases compared most favourably with those of most other commodities.

GAS INDUSTRY MEDALLISTS

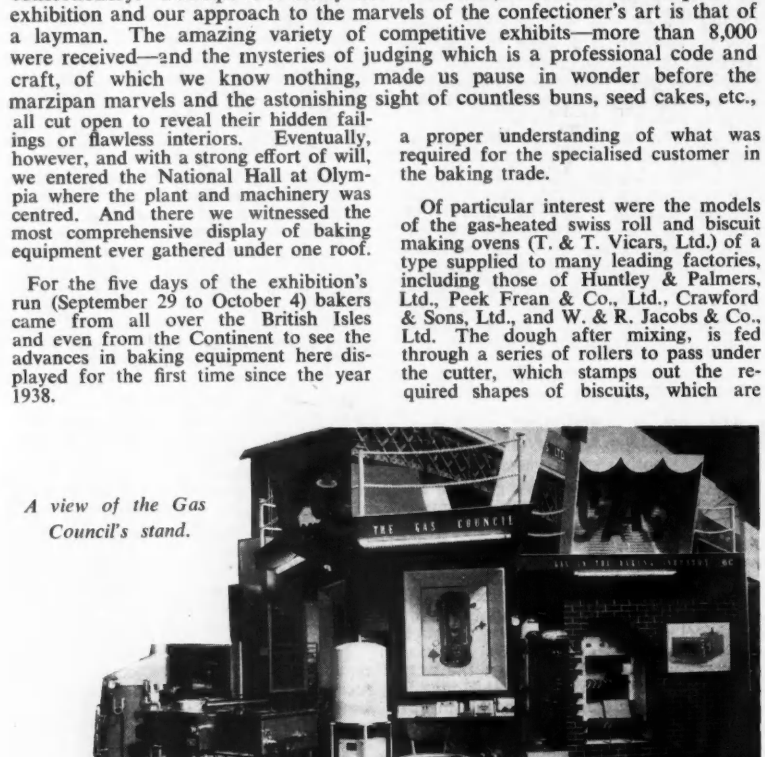
This picture shows seven British Empire Medallists from the gas industry with the Rt. Hon. P. J. Noel-Baker, M.P., Minister of Fuel and Power, after the presentation of their awards. **Left to right:** *Mr. L. R. Robertson (manager, Machynlleth undertaking, Wales Gas Board); Mr. C. S. Aveson (assistant foreman, Southern Gas Board); Mr. F. J. Walker (mains foreman, South Eastern Gas Board); the Minister; Mr. A. A. Bates (warehouse checker, North Thames Gas Board); Mr. T. Reynolds (storekeeper, Granton gasworks, Scottish Gas Board); Mr. I. W. E. Hill (truck weighman, North Eastern Gas Board); and Mr. H. Boyd (trench inspector, East Midlands Gas Board).*

BAKERS' AND CONFECTIONERS'

Forty-third International Exhibition Reviewed

IT is a curious thing that of the many visitors to the 43rd international Bakers' and Confectioners' Exhibition, the bakers themselves tended to head straight for the plant and machinery while we, whose work is bound up with the more mechanical aspect of baking, were inclined to dally with the confectionery. Perhaps it is really not so curious, since this was a specialist exhibition and our approach to the marvels of the confectioner's art is that of a layman. The amazing variety of competitive exhibits—more than 8,000 were received—and the mysteries of judging which is a professional code and craft, of which we know nothing, made us pause in wonder before the marzipan marvels and the astonishing sight of countless buns, seed cakes, etc., all cut open to reveal their hidden failings or flawless interiors. Eventually, however, and with a strong effort of will, we entered the National Hall at Olympia where the plant and machinery was centred. And there we witnessed the most comprehensive display of baking equipment ever gathered under one roof.

For the five days of the exhibition's run (September 29 to October 4) bakers came from all over the British Isles and even from the Continent to see the advances in baking equipment here displayed for the first time since the year 1938.



A view of the Gas Council's stand.

For the gas industry is was something of a triumph, in that gas ovens were in the majority and covered the whole range of sizes and types. But the electricity industry may also claim it as a triumph and with some reason, for there were more electric ovens than ever before and they showed some marked advances in design. It is, however, the gas exhibits that we propose to describe and although this review is not claimed to be fully comprehensive of all gas equipment on show, it does, we believe, serve as a guide to some of the firms exhibiting in this field and their products.

The gas industry may rest assured that its interests were well protected. The Gas Council's stand, although comparatively small, was well placed and showed a proper understanding of what was required for the specialised customer in the baking trade.

Of particular interest were the models of the gas-heated swiss roll and biscuit making ovens (T. & T. Vicars, Ltd.) of a type supplied to many leading factories, including those of Huntley & Palmers, Ltd., Peek Frean & Co., Ltd., Crawford & Sons, Ltd., and W. & R. Jacobs & Co., Ltd. The dough after mixing, is fed through a series of rollers to pass under the cutter, which stamps out the required shapes of biscuits, which are then conveyed by a canvas band on to an endless wire mesh band travelling through the baking chamber of an oven.

This chamber is constructed of steel sheets with a cavity between the inner and outer sheets, filled with non-conducting material to prevent loss of heat by radiation, and heating is carried out by two rows of gas burners, the lower row being arranged underneath the travelling wire mesh band and the upper row above this. Each gas burner can be separately adjusted, thus giving control of heat in each portion of the oven. A change-over from one class of biscuit to another, requiring different temperatures and conditions, can be made in a few minutes, and gauges and pyrometers enable the baker quickly to reproduce any given baking conditions required. After baking, the biscuits pass from the wire mesh conveyor band on to a cooling conveyor which arranges the biscuits in rows, ready for packing.

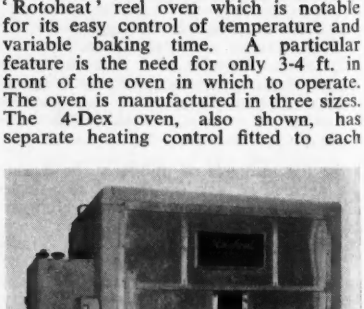
The swiss roll oven was similar to those in operation at the factories of Broadhurst & Co., Ltd., of Gadbrook, Northwich; and I. H. Lavery & Co., Burscough Bridge, Southport. It automatically ensures uniformity in batter delivery, baking and texture, in any of the range of weights and sizes of sponge rolls which can be made. The oven, which is fitted with overhead cooling, is so constructed as to need the minimum of floor space and of servicing, but can be adapted to fit the particular layout of the factory concerned.

The use of gas-heated appliances in the confectionery industry was illustrated by two North Thames Gas Board exhibits, a fondant boiler and a sugar boiler. The Board was also responsible for the exhibit demonstrating the working of a gas-fired flue conversion set. The value of such firing in the bakery is now well established among bakers, being clean (a point of the greatest importance in dealing with food products), rapid in heating, easy to control, and saving both labour and space by eliminating the need to handle and store fuel. Other exhibits on the stand included water heaters, boilers and storage sets, overhead heaters and a model of a double deck steam tube oven.

Stand design on the gas display was quite striking and effective, and the Gas Council can again be congratulated on doing an excellent job in the exhibition field.

Trade Stands

Thomas Collins & Co., Ltd., on a stand which embraced a considerable range of bakery equipment, included several examples of modern gas-fired ovens. Of particular interest was the 'Rotoheat' reel oven which is notable for its easy control of temperature and variable baking time. A particular feature is the need for only 3-4 ft. in front of the oven in which to operate. The oven is manufactured in three sizes. The 4-Dex oven, also shown, has separate heating control fitted to each



The 'Rotoheat' oven exhibited by Thomas Collins & Co., Ltd.

top and bottom heating. Other gas exhibits included the 'Multi-Dex,' 'Handyman,' and double deck drawplate ovens.

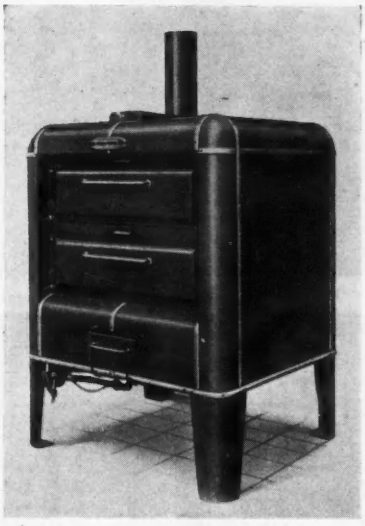
Cox Ovenbuilders, Ltd., had a striking stand which although quite small benefited by good design. It was dominated by an 8 ft. × 6 ft. 'Master' oven with full width doors. The standard heat-trap construction, welded steam-proof compartments, tiled soles, and heavy insulation added to its baking qualities and fuel economy. The full width slide-up doors allow straight setting and peeling, and when fully open they still cover the upper half of the compartments to retain the steam when setting Vienna bread. This type of oven is intended to offer the quality expected of a Peel oven and the quick working of a drawn-plate oven. A small oven made of Perspex was also on show to demonstrate the heat-trap system common to all Cox ovens. Others in the series include 'Baby' Cox and the 'Cox Royal.'

Dawson Bros., Ltd., exhibited four types of tray and utensil washing machines. The largest, the T.3, has a circulated hot air chamber to assist drying for capacities up to 800 trays per hour. The trays or utensils are inverted and placed on galvanised mild steel flight bars secured to a slowly moving roller chain conveyor, and are first subjected to a pumped detergent solution at 160°F., followed by a pumped hot water wash at 180°F., and finally a scalding hot rinse to sterilise before entering the lagged hot air drying chamber where the wooden trays are partially dried by hot air from a centrifugal fan and steam heater battery. Also shown were the T.1 machines (200 trays per hour), the model 'B' stainless steel dish washing machine which is fully automatic and can handle 6,000 pieces of crockery and cutlery per hour, and the well-known 'Hydro' bottle and jar washing machine giving capacities up to 2,400 per hour.

Dumbrill Plant & Engineering Co., Ltd., exhibited a considerable range of baking equipment, including several ovens. Of these, two were fired by gas The 'Supergas' hot air oven is intended primarily for use as an auxiliary unit and in hotels, restaurants, etc. Of sound construction, the arrangement of the brick built ducts ensures perfect heat circulation and minimum gas consumption. Also shown was a twin treble deck portable steam tube peel type oven, with tile sole bottom deck and special metal alloy soles for the upper deck, ensuring maximum heat flexibility and thus rendering it suitable for a mixed trade. Steam dampers are fitted to each deck to discharge surplus steam to the chimney before the doors are opened. All 'Supergas' ovens can be thermostatically controlled, if required.

Ellerstyle Engineering Co., Ltd., exhibited two examples of their well-known gas-fired steam boilers—Nos. 2 and 5 in the series. These can be provided with manual operation, with electric pump, or with completely automatic control. They can also be arranged with separate steam outlets. Of multi-tubular design and fitted with copper tubes, they are fitted with a carefully designed burner having luminous type burners, ensuring minimum gas rate with high efficiency. The 'Thermspray' boiler was shown for both town gas and butane. The automatic regulator cuts down gas and prevents steam wastage when the boiler is up to a working pressure of 28 or 30 lb. When fresh water is injected, gas is automatically turned up. Other exhibits included the front of a three-deck 8 ft. × 6 ft. oven with thermostatic control on each deck.

Kent & Co. (Globe Works), Ltd., exhibited examples of the 'Gascon' series of gas-fired peel and drawplate ovens, re-designed and modernised to ensure efficiency and economy. A similar series, coke-fired, is available for areas where gas is uneconomic. A new reel or rotary type oven with revolving trays has been designed for the baker requiring the advantage of a travelling oven in limited space. Information was available on complete automatic plant, including first and final provers and swing tray and travelling sole ovens. A considerable range of baking machinery was also displayed.



The 'Flugas' oven by S. A. Rhodes, Ltd.

Pelkman Bros., Ltd., on an impressive stand, showed one of the largest ovens in the exhibition. Of new design this was a wire band oven allowing for flexible baking—so flexible, in fact, that baking time could be varied from five minutes to two hours. This was a two section oven, 32 ft. in length, with an output of four sacks per hour. By adding another section, output could be increased by two sacks per hour. Gas consumption was 330 cu.ft. per sack. An interesting feature was a motor-driven wire brush for effective cleaning of the wire band.

Charles Portway & Son, Ltd., have built their reputation by catering for the small and medium sized baker and producing ovens of low cost and high efficiency by the elimination of luxury features and finish. The latest model is a portable gas oven made in four sizes. Luminous burners are employed and the whole burner arrangement is considerably simplified. Single control for the gas supply makes for easy working, and all dampers and fresh air ventilators have been dispensed with. By a simple adjustment of the elbow fitting, the gas supply can be connected from either side or from back or front or underneath. This oven, like the solid fuel models, is finished in galvanised sheeting and black paint.

S. A. Rhodes, Ltd., exhibited a number of gas-fired ovens of greatly varying capacities. The smallest was the 'Flugas,' a light, extremely portable oven for light trade and canteen work, which rises to baking heat in 90 minutes. On the larger size was the drawplate oven, the front of which was shown; this can be installed as a hot air or steam tube oven, or as a combination of both. Most interesting perhaps was the four-deck steam tube oven known as the 'Rhodeks,' which has been designed to give the advantages of the multi-deck oven, although still keeping the height of the oven chamber to the minimum required for the baking of bread. One of the best known of the firm's products, the 'Suprema' hot air oven, was also shown.

H. Smith & Son (Lambeth), Ltd., exhibited a considerable range of equipment typical of their products. The firm manufactures gas- and coke-fired steam tube ovens, single and double furnaces, straight or bent tubes, two, three or multiple decks; gas- and coke-fired hot air ovens and side flue ovens. Steam boilers are also produced, for the injection of steam into oven; these are gas- or coke-fired, with automatic feeds of all descriptions. Other products include complete hot water installations, either independent or incorporated with the heating arrangements of ovens, and a range of instruments. The conversion of coke and coal oven to gas firing is also a speciality.

James Stott & Co. (Engineers), Ltd., exhibited a very considerable range of catering equipment including the well-known 'Derby' boiler, 'Regula' and 'Junior,' automatic café sets, water boilers, the new stainless steel 'Multi-pot,' a small steaming oven, a new fryer, and a fitted hot cupboard. Many visitors must have been interested to see the recently introduced sterilising sink and combined wash-up and sterilising sink unit which has been designed to put crockery and cutlery on a scientific production line basis—stacking, washing, sterilising, and drying. The sink has a fully insulated combustion chamber heated by a non-aerated bar burner, and combined flue-break and down draught converter.

Whitfield (Engineering) Chemical Co., Ltd., attracted considerable interest with their 'Traymaster' bakery tray and pan washing plants. These plants are made to suit the large or small bakeries in sizes to take 6-12-24 wooden trays. Small shapes, tins and bowls can be thoroughly washed and sterilised in the same plant. The machines are soundly constructed of 16-gauge sheet metal for small models to 14-gauge for large models. For the purpose of temperature registration a thermometer is placed centrally in front of the tank and a ¼-in. gas tap controls the heating of the chemical solution. Two-way lids are fitted to act as a washing rest for small utensils and form a table top when the plant is not in use. The machines have chrome fittings and cream enamel.

GRAIN DRYING BY GAS

Investigation Reveals Trouble-Free Operation

THE Industrial Gas Development Committee of the Gas Council has, among its many and varied activities, investigated the possibilities of the use of gas for drying grain. Reports have already been published on this interesting application. The latest publication of the Committee, of which the following is an abstract, describes work carried out by the North Thames Gas Board and relates to a plant installed at Farm Dryers, Ltd., Maidenhead.

Fig. 1. (Above)—The drying tables looking towards the inlet feed.

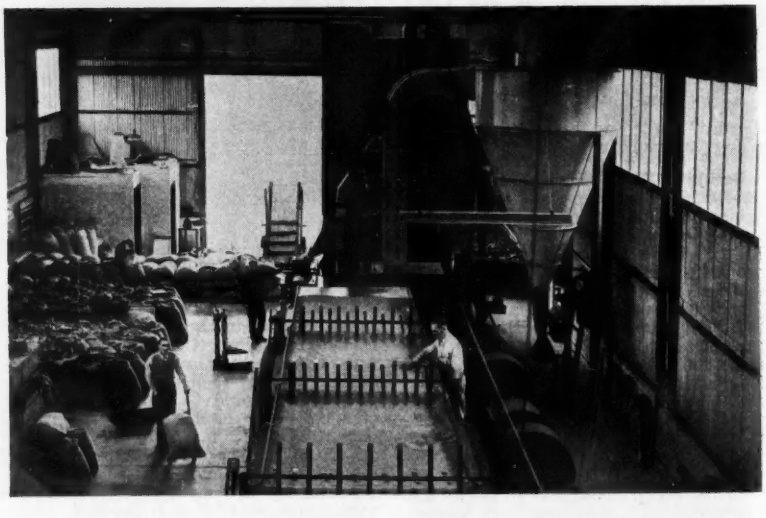


Fig. 2. (Right)—The plant looking towards the exit.

The plant worked by Farm Dryers has, in fact, been in continuous use for three years—with practically no trouble. It is owned by a group of local farmers and, apart from drying their own grain, is used commercially for contract drying for other farmers and for the Ministry of Agriculture.

In the process, grain is delivered in sacks and loaded into a concrete hopper below floor level at one end of the drying building. Thence it is elevated by a bucket type conveyor and falls down ducting to an Avery automatic scale which records the amount of grain passing through it. The grain is then lifted by a second bucket conveyor and discharged into two large steel storage tanks and from these is fed via a third bucket conveyor to the beginning of the drying tables. These drying tables measure about 10 ft. long and 6 ft. wide, are slightly sloped, and consist of a number of mild steel slats through which hot air is blown, the tables being automatically and continuously shaken, so that the grain is stirred and moved forward. Four of the tables are fitted with gas-fired direct pattern air heaters, while the fifth table is fitted with an air blowing fan only, for cooling the grain before bagging. Fig. 1 shows a general view of the drying tables looking towards the inlet feed.

The gas air heaters are of robust design, using neat gas burners, complete with a 1½ in. B.S.P. Jeavons constant pressure governor and a Spersom rod type thermostat connected to a 1½ in. relay valve. The burners have a consumption per heater of 1,200 cu.ft. per hour at 2.5 in. W.G. A Honeywell-Brown Pilotstat and solenoid valve are linked to the electric supply to the fan. The heater can be run at varying temperatures depending on the material to be dried. A normal maximum is about 135°F. Fig. 2 shows a general view of the plant looking towards the exist; the air heaters can be seen on the right.

When the plant was inspected in September, 1950, barley was being dried and all four heaters were controlled at 110°F. The speed of drying can be varied depending on the moisture content of the material and the degree of drying required. The plant has a rated output of two tons an hour with a 6% moisture reduction. Normally the grain is received with about 20% moisture content and has to be dried down to 16%. Under these conditions the plant was giving an output of three tons an hour. Over the preceding six weeks (48 days) the plant had been in use from 6 a.m. to 10 p.m. and during this time 1,200 tons of grain was dried, approximately 30 tons a day. Fuel costs were stated to be 5s. 6d. per ton, based on an average price of gas over one year of 13.67d. per therm. This compares with the makers' figure of 5½ therms per ton for normal outputs.

After the grain leaves the fifth table (cooled) it passes into another hopper whence it is elevated by a fourth bucket conveyor and fed into the grain cleaner.

An advantage of the open type dryer such as that described is that precleaning is not necessary. The good, full size grain from the cleaner is discharged through another Avery recording scale to the bagging point. Thus a complete record is kept of the grain that enters the plant and that which leaves it.

LARGE SCALE ORGANISATION IN THE GAS INDUSTRY

By R. S. EDWARDS, Ph.D., B.Sc., A.R.C.S.,
Chairman, Northern Gas Board

(From an address at the Annual General Meeting of the Yorkshire Junior Gas Association, Leeds, October 6, 1951).

AS the Yorkshire Junior Gas Association is comprised of members whose activities are concerned with the day-to-day job of producing and distributing gas, it might be of interest to consider some of the principles involved in co-ordinating this work and that of all the other people in our gas boards, so that we function as an effective and coherent whole in performing the duties laid upon us in the Gas Act of 1948.

A dominant feature of the Act in this connection is that it created 12 large-scale organisations to replace something like 1,000 separate undertakings of varied size, to take effect at a certain instant of time, namely, midnight on April 30, 1949.

As I see it there is a fundamental difference between those organisations of human beings which are capable of complete control by a single individual and those which must rely upon a mechanism devised by a centre and operated by individuals at a distance from that centre. By distance I do not necessarily mean geographical distance, though that is very often the case, but it may include distance as meaning a series of intervening steps in the chain of human relationships which, because of the size of the organization as a whole, separate the individual from close contact with certain of those above him in the undertaking.

Some time ago a study was published of the structure of British industry, measured in terms of the numbers of people employed in undertakings, not necessarily always single firms as legal entities but undertakings under single control, from which it emerged that some 3% of the units of British industry employed 32% of all the workers, and some 33% of all the separate undertakings employed between them only 3% of the workers. Since then the amalgamation of all the collieries under the National Coal Board, and the creation of the Transport Commission, for example, have still further accentuated this tendency.

Giants of Industry

Leaving such giants aside, we should not forget that there are a number of organisations in industry which control very much larger numbers of men than the separate gas boards—*e.g.*, Imperial Chemical Industries, General Electric Company, the English Steel Corporation, Dunlops, the motor firms Austin's, Nuffield's, Rootes Group, to quote only a few employing many thousands more than the largest gas board. In general terms, manufacturing industry, according to 1935 census, had 63 business units employing more than 9,000 people. This ignores retailing firms like Lewis's, International Stores, etc. The numbers employed by the various gas boards are:—

Board.	At July, 1951. No. of Employees
Scottish	10,768
Northern	6,636
North Western	18,553
North Eastern	8,651
East Midlands	10,526
West Midlands	12,608
Wales	4,751
Eastern	9,075
North Thames	23,973
South Eastern	21,364
Southern	7,517
South Western	8,589
	143,011

It should be borne in mind that 90% of the North Thames Gas Board represents the former Gas Light and Coke Company, which therefore had in its employ over twice as many people as either the East Midlands or the North Eastern Gas Boards. Thus, our boards can perhaps properly be regarded as large-scale organisations, but definitely not as being in the giant class.

The dominant feature of the gas industry in this part of the country is that we have no very large aggregations of employees in any particular place, and that we are spread over a fairly large geographical area of some 4,000 sq. miles. For example, in the North Eastern Gas Board the largest number of employees at any one place is 450, and of this number a good proportion operate on shifts, thereby substantially reducing the number of men at work together at any particular time.

Discoveries of Science

It is generally accepted that the obvious advantages of large-scale organisation include the ability to raise capital and to apply it successfully to technical projects on a scale which is impossible to the smaller unit. The continual progress of scientific and technical knowledge is making it more and more essential to have larger units if we are to take advantage of of the discoveries of science. Indeed, a great many of the discoveries can only be operated at all if the unit is physically much larger than those which were both possible and economic in past times.

While admitting the physical necessity for large-scale organisation, it is clear that it brings in its train the need for increasing the number of people in the team who are working for a common end and a common purpose, and that inevitably a great many human problems arise because in this field we are working not with machines but with human beings.

Much has been written on the principles of organisation, but so far it has not been possible to reduce this to the technical terms which we can so readily understand when dealing with processes and engineering problems. We tend to get confused in the meanings of words, and I would like to suggest that one of the best definitions I have come across of organisation is that it is a means of concerted human endeavour.

What then are the principal aims which are desirable in the gas industry if we are going to achieve effective concerted human endeavour in the large units which now are the basic set-up of our industry? In all industry it has been accepted that there must be a central group, built up in varied ways, according to the past history, tradition and circumstances of any particular firm, which must make the major policy decisions. In our case the boards have been set up by an Act of Parliament, in a form prescribed by Parliament, and the pattern is familiar to you.

Laying Down Lines of Policy

Bearing in mind the physical characteristics of the industry it is apparent that the boards must inevitably content themselves with laying down clear lines of policy and devolving day-to-day control effectively to goodly distances from the centre. Any attempt to make *all* day to day decisions at the centre would 'bog down' an organisation in which so many of its members do the work on their own initiative, as they do within the gas industry. What is essential is that the organisation, as set up, must effectively disseminate central policy decisions out-

wards to the appropriate personnel quickly, and equally arrange that the necessary stream of information for the making of sound policy decisions shall flow back to the centre.

Every large organisation is aware of the danger of becoming too rigid and 'safety-first' in its operation, or too bureaucratic in outlook, a term often used to describe this condition. What is desired is a nice balance between well thought out rules of procedure, and a sound system for devolution of authority while retaining the flexibility possible to a small organisation controllable by one man.

The organisation adopted by the North Eastern Gas Board was described in the Board's first report. Head Office is conceived as a central co-ordinating and common service centre. It is divided into four departments:—

Chief Engineer's Department
- (i) Production.
- (ii) Distribution.
- (iii) Progress, planning, and development.
- (iv) Authorisations and licences.

Chief Commercial Officer's Department
- (i) Gas sales and tariffs.
- (ii) Domestic consumer service.
- (iii) Industrial consumer service.
- (iv) Installations, stores, and transport.
- (v) Residuals.
- (vi) Publicity.

Chief Accountant's Department
- (i) Receipts and payments.
- (ii) Internal audit.
- (iii) Financial accounts.
- (iv) Statistics.

Secretary's Department
- (i) Administration.
- (ii) Industrial relations.
- (iii) Property matters.
- (iv) Legal.

Head office is non-operational apart from the common service sections such as the legal section of the secretary's department, and such sections of the chief accountant's department which are concerned with the final balance sheet, etc.

Field of Contact Widened

Away from head office the Board's area is divided into six groups, which were chosen having regard to:—

- (a) Geographical peculiarities of the area.
- (b) Density of consumers.
- (c) Site and size of manufacturing stations.
- (d) Pre-vesting date organisation which passed on partial ready-made groups already formed by the former York, Harrogate and District Group of Gas Companies and the former West Riding Group of Gas Companies.

In addition, of course, there is the West Yorkshire Gas Grid which has been retained as a separate entity and partakes more in the form of a wholesale gas distributing organisation than anything else.

Each group is an operational unit, of a size which it was conceived would be capable of effective control as an operational unit by the Group General Manager assisted by a small group staff organised on the same lines as the head office departments. Meetings of the appropriate group officials with the chief officers at head office take place as required, in order to co-ordinate area activities.

The groups each contain a number of districts which have been formed, in the main, from the former undertakings, though a few have been combined. Each district, or combination of districts, has been placed under the operational control of a district engineer and manager, or district manager, and regular meetings are held, under the chairmanship of the group general manager, of the district engineers and managers *in each group*. In addition meetings of district engineers and managers *throughout the Board's area* take place, continuing a practice which obtained before vesting date.

These meetings are the channel through which all concerned are made aware at frequent intervals of the Board's policy, and in their turn they provide the machinery whereby day to day problems are discussed and brought to the notice of the Board with recommendations for appropriate action. The field of contact is therefore widened, and the meetings provide the means for information to be 'fed out' from the Board and back again to the centre, particularly so far as changes involving policy decisions are concerned. Day to day matters are handled by direct communication to the people involved.

It was hoped that the groups, which employ up to 1,500 people, would have all the advantages that accrue to a relatively small unit capable of flexible and enterprising control by one man, plus the advantages of large-scale organisation available through head office. In other words, the Board has endeavoured to devise a machine whereby the nice balance I have referred to is preserved—*i.e.*, the advantages of large-scale organisation obtainable by the Board as a unit are allied with day to day enterprise and efficiency by maintaining small operational units capable of independent control.

The full-time members of the Board, between Board meetings, are available to give guidance and, if necessary, decisions on matters which do not need the decision of the full Board. They serve, of course, also as the spokesmen of the Board on the various national bodies concerned with the industry.

No Danger of Bureaucracy

So far I think it can be claimed that the conception has worked quiet well, and that we are not in any danger of becoming bureaucratic in operation.

At this juncture I would like to make one important point, which is perhaps in a measure only indirectly related to the main theme of my remarks. Earlier I mentioned that the 12 area gas boards were created by a legal Act and came into existence in a moment of time. In the case of the North Eastern Gas Board it meant that 76 completely separate legal entities were merged, and thus we were faced with devising a method of operation applicable to them all to take the place of the 76 different ways of doing, or not doing, almost all the essential things in the successful conduct of the business of the manufacture and distribution of gas.

This is something unique, and I think that a good many critics have failed to recognise the tremendous task that was thrust upon those given the responsibility of top-line management in the nationalised industry. I do not know of a single large continuing business organisation which has been faced with a precisely similar set of circumstances. Most of our great industrial giants have, it is true, grown by a series of amalgamations, but in general this has been a process of assimilating small units into an already large structure, which has developed its own method of operation suited to its particular circumstances over a long period of time. The process has usually been that of welding in a new partner to the existing structure.

Paper Work Eases Off

In one or two cases of the area gas boards there already existed a very large unit, and the process has perhaps been somewhat on the lines of normal business practice, but in the case of the North Eastern Gas Board this was not so, as no single former undertaking could be regarded as a dominating power, and therefore the Board was faced with the necessity of building its structure from the ground floor up, while, by some means or other, continuing to keep the existing undertakings in a sound way of business. This inevitably involved in the early stages a great deal of enquiries into existing practice, and meant that a great effort had to be made to get information back to the centre in order to provide the basis for sound decisions.

It was this fundamental difficulty which gave rise to the questionnaires and other enquiries at the commencement, and caused a number of people to be fearful of an everlasting flood of paper. Already this has eased off, and the shape of the permanent structure is visible. We have, however, still a

Concluded at foot of p. 100

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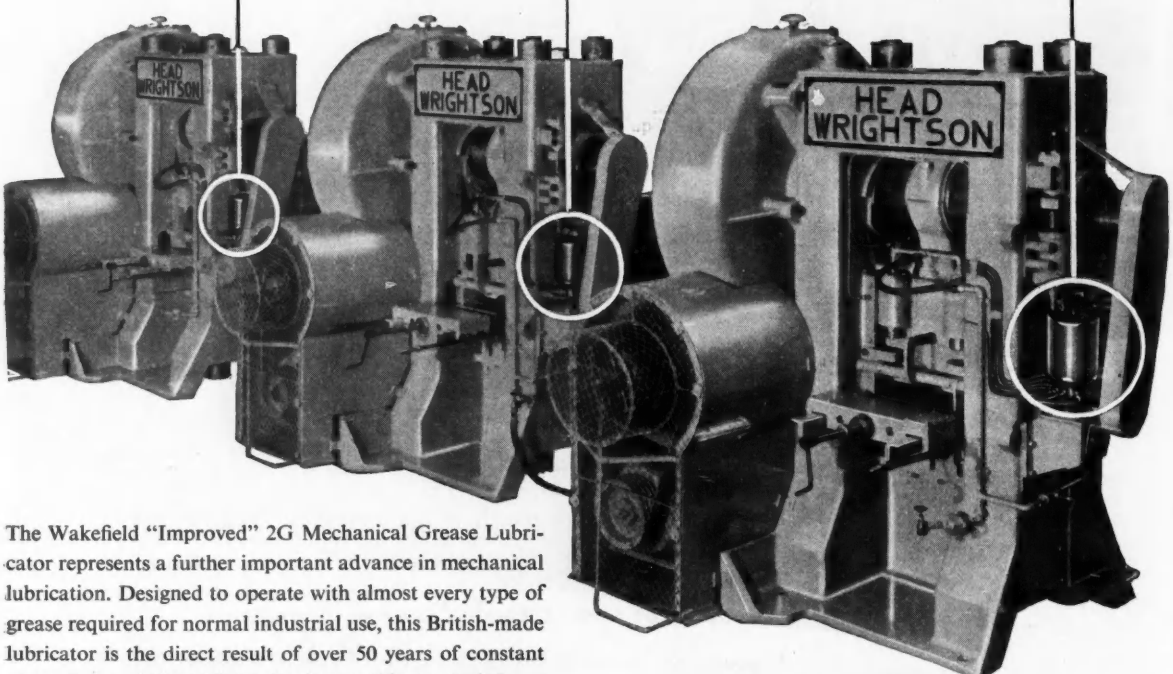

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Gas Industry in France

Our Own Correspondent extracts from the French Technical Press a selection of current developments in the gas industry across the Channel.

THE holiday season suggests to the Editor of *J. des Usines à Gaz* an opportunity to sit back and take stock of the industry. There are difficulties in the works arising out of a shortage of staff which extends over a period of some three months; the public service must be maintained, but the 'flow of circulars from head office reaches a low water mark' and there is time to reflect. It is indeed premature to forecast the results of working during the year 1951; but homage is due to the authorities for their courage in allowing gas to reach a normal price over several months, a position it has not enjoyed for a number of years. These normal prices are today very near to those of competing fuels. But the use of gas in its many applications presents advantages so real that the industry can enter upon competition with confidence provided the competition is fair and that gas is permitted to use the same weapons of propaganda and marketing as its competitors. The inevitable increase in price has provoked criticism; not unnatural in view of the long delay in this necessary adjustment. On the other hand some favourable remarks are noted, one particularly, in a contemporary journal, congratulating the Cinderella of Industry upon its sensational recovery. To obtain this result it has been necessary, not without taking risks, to depart from the beaten track, abandoning in some cases traditional methods of transforming coal into gas and coke, to engage in very different methods such as complete gasification, the utilisation of natural gas, direct manufacture from liquid fuels, as well as the use of refinery gases to which recourse must soon be had if regular supplies of these prove to be available. All these processes are in course of industrial realisation, and without under-estimating the obstacles to be overcome, which are 'the ransom of novelty,' it is clear that the revolution now going on in gas technique is something one did not dare to imagine possible only 10 years ago.

Transmission

Gas thus being produced at the minimum of cost there remains the task of transporting it in the optimum conditions of security and economy. It would be unjust to withhold credit from the technicians who, in France, have perfected the storage of compressed coal gas. Not only has the home country benefited from their experience during the war and after, at least in certain regions, but they have had the immense merit of familiarizing the industry at large with the use of high pressures. Abroad, as well as in France, high pressures have been used for the transmission of natural gas, but not hitherto for that of coal gas; this, however, is the only way to realise with mains working to full capacity the cheap transport of gas to the point of consumption.

It is also obvious that the client ought to be given the best service in return for the price he has to pay, and which he will always have the tendency to regard as too high. The national system of stamps of approval of tested apparatus ensures that we place at his disposal appliances of good quality. But that is not sufficient; we must maintain constant quality and conditions of distribution in the gas itself. Otherwise all propaganda effort will be in vain. It is only after consolidating our base that commercial activity can be usefully engaged in with the object not only of maintaining but of extending our positions. Economy correctly understood should be the source of wealth for a nationalised industry which does not seek to distribute dividends but which is under the imperative necessity to achieve financial self-support.

The Technical Section (Etudes et documentation) of the August number of the French Journal contains four papers: on a new method for the separation and purification of napththalene, by Prof. E. Bellet; an automatic arrangement for igniting blow gases in the boiler of a C.W.G. plant, by M. A. Audry, Gas Engineer at Chalon-sur-Saône; a translation from the English of a paper by Mr. L. T. Minchin on the behaviour of burners with unusual gases; and a contribution to the upgrading of residual acids from the treatment of benzole and light oils, by Mlle. Genevieve Desnos, of the Research Department of Gaz de France. The first two are short and practical, the others, long and fully illustrated by graphs and mathematics, are more academic in interest.

Prof. Bellet, of the tar section of the Research Department of Gaz de France, describes a further development in recent methods of preparing pure naphthalene. These are based on the absorbant properties of certain activated de-colouring earths which are capable of retaining the greater part of the impurities remaining in naphthalene after its separation and partial purification by sublimation. These earths, of which the type is that with the trade name 'Clarsil,' made by the *Ste Carbonisation et Charbons actifs*, are sufficiently active for an addition of 10% to fix a portion of the different impurities by simple contact in the cold. Heated by reflux boiling (turbulence favours the operation) for 30 minutes a naphthalene with a fusion point of 78.2°C. is purified by an addition of 5% clarsil. At the end of this period one proceeds to simple distillation. The first fractions are eliminated. The residue is cooled, broken and cleared with denatured alcohol. The final product is very pure, in perfectly white crystals, with a fusion point of the order of 79.7° to 79.8°.

M. Audry's arrangement is designed to light up the waste-heat boiler of a C.W.G. plant, which is brought into operation for 8 to 16 hours per weekday. To obtain good oil-cracking the temperature in the super-heater must be maintained as constant as possible between 730° and 750°. On the other hand it is advantageous to keep the waste-heat boiler producing sufficient steam to effect gas production without outside supply. To secure this in normal working, blowing must be sufficient for the gas produced to be partly burned in the carburettor to maintain this at the requisite temperature and for the rest to assure heat supply to the boiler to produce the necessary steam. Two arrangements are described, with sketches, each consisting of controlled blow gas and rich gas burners and air supply to heat either the super-heater or the boiler. It is shown that this procedure effects a saving of fuel over steam supply from any external source.

Technical Dictionaries

The Editor of *Chimie et Industrie* returns to the subject of the technical dictionary, a question which formed the subject of a resolution of UNESCO at their meeting of June, 1949. Nothing further has been heard of this and he fears that this resolution, like so many others, will remain 'platonic,' for which in view of the extreme difficulty of its realisation there is a large measure of excuse. But several technical dictionaries, 'or works which pretend to that title,' have appeared in the interval and Dr. J. Holmstrom, himself attached to UNESCO, has issued a circumstantial report on scientific and technical plurilingual dictionaries with a bibliography enumerating no fewer than 1,044 specialised dictionaries in 45 languages, some single, others in several languages. 'When,' writes Dr. Holmstrom, 'a specialist in one or other branches of science or technique has received a bilingual education, and when his professional experience is equally divided between the two countries of the different languages, he is able to read and assimilate technical documents without the language employed entering into question. But to translate these documents perfectly, orally or in writing, he would need to have acquired an exceptionally good knowledge of these technical languages written as well as spoken. . . . The dictionary is intended to permit those who do not possess this exceptional combination of qualities to approach perfection as near as possible.'

According to A. L. Gardner, in a paper on this subject, technical dictionaries should before all be lightened by the rejection of superfluous matter they too often contain; they should never include words already to be found in a good

general dictionary. Dr. L. L. Sell, who published in New York in 1932 an exceptionally good Anglo-French dictionary of the automobile, is of the opinion that the technical dictionary should be limited to a restricted field of technique. The Editor is inclined to agree with these views, but points out the difficulty of producing such dictionaries at a reasonable price. The difficulty is the greater if the book is to be adequately illustrated on the lines, for instance, of the well-known Schlomann dictionaries in six languages, in which the text is arranged in two columns with illustrations between, nearly to the extent of a drawing to every separate term.

In the same issue, M. J. Breuil discusses formulæ for the height and proportions of chimneys with monograms upon which the results can be read. These are based on the relation, $v = 15P$, where v is the volume in m^3 of products of combustion at 0°C. and P, the weight in kgs. of coal burned per hour with 70% excess air. The height, H, in m. is based on the relation $H = \left(\frac{0.0073P}{S}\right)^2$ where S is the area of the opening at the summit in m^2 and the constant 0.0073 is derived from a gas velocity between 5 and 7 m/sec.

There is also a useful and well-illustrated paper by Mr. David Wittenberg, of Haifa, Israel, on the de-dusting of materials during handling. Dust is emitted particularly at points where the material falls from one level to a lower: (a) by displacement of air, (b) by the partial dissipation of kinetic energy into air movement, and (c) by the action of the falling material as a low-power ventilator, creating a negative pressure, entraining air in its fall. Sketches show the author's application of de-dusting apparatus, by mechanical aspiration and by ventilating funnels, to several examples of connections between conveyors, grabs to hoppers, screens, etc.

And M. F. Hugues, of the Research Department of Gaz de France, writes on the action of various physical and chemical agents on coal-tar pitch. For a long time coal-tar pitch was regarded as a material inert or only slightly reactive, but it now appears to be a very complex mixture extremely sensitive to a number of reagents. The present paper, after a summary of previous work, proceeds to the study of the precipitation of the resins by ether of petroleum, refining by acids and bases, the action of super-heated steam, the effect of oxidation. This work promises to throw important light on the constitution of coal-tar pitch.

ARBITRATION

WITH the wish that we may avoid arbitration—and much more legal—proceedings, Mr. J. R. W. Alexander, Executive Chairman of the Gas Officers' Guild, has set us an advance copy of his booklet, *Arbitration*, the subject matter of which first appeared in two instalments in *The Secretary*. In addition to his many services to the gas industry, Mr. Alexander is Vice-President of the Chartered Institute of Secretaries and Vice-President of the Institute of Arbitrators. His booklet summarises in lay language the provisions of the Arbitration Act, 1950, which came into operation last September.

'Arbitration,' says the author, 'is popular because it is generally quicker, cheaper, and, from a layman's point of view, less complicated than a high court or county court action, and less likely to stimulate antagonism between the parties. . . . Arbitration proceedings have the further advantage of not being reported in the Press. The tribunal is a private one, and either party, or the arbitrator, may successfully object to the public being present.'

Statutory arbitrations have become increasingly common and important. Examples are to be found in enactments dealing with land, building, housing, town and country planning, rating, health, and nationalisation. In this connection, Mr. Alexander specifically refers to Sections 63-66 of the Gas Act, 1948, relating to the establishment and procedure of the Gas Arbitration Tribunal. *Arbitration* is published at 2s. net.

LARGE SCALE ORGANISATION — Concluded from p. 94

long way to go before we can say we have brought our organisation as a means of concerted human endeavour to the level at which it can truly be said that we have achieved (to use the words of another definition) 'a full harmonious inter-relation of functions and staff.'

While there is reason to feel that we have now put a fairly sound structure into being, and while the management (and I include the more subordinate levels of management as well as top management) are fairly well harmoniously interrelated with their functions, we still need to spread this more widely among the operative sections of the staff. This is a vital desideratum in a gas board where so many of our staff have direct contact as spokesmen and representatives of the Board with our customers, the general public.

To this end it is necessary to have a sharing of the objective by all members of the staff, with all staff members sincerely desiring the success of the enterprise. Board policy must be fair and inspiring, and harmonious relationships must be achieved between the Board, the management, all other members of the staff, and the public. Because of the number of people involved this can only be developed gradually, and it involves the working out of sound consultative machinery at all levels, good public relations facilities, and effective means whereby the fair and inspiring policy, as determined, can be fed out to all those concerned in its implementation, and likewise the needs of the public and of the staff generally can be fed back rapidly to the centre of the organisation.

In the last resort it is the human element which will determine our ultimate success or failure. Our organisation is not, and should never become, a static affair. It should at all times be such as to inspire all of us who earn our livelihood in the gas industry to feel that we have a personal responsibility for its success.

POWER-DRIVEN DERRICK CRANES

THE fourth revision of B.S.327, which was originally published in 1928, has recently been issued by the British Standards Institution. This new revision follows similar lines to the previous editions in that it indicates the minimum requirements for power-driven derrick cranes of the normal type, and is intended to secure the general observance of such fundamental principles as appear desirable to secure reliability and safety without hampering the freedom of the crane maker in his selection of the most appropriate design for the purpose in view.

The standard does not, however, deal with hand-operated cranes which have been converted to power operation, but these are dealt with in B.S.327, Part 2, 'Derrick Cranes (hand-operated)' which is now undergoing revision.

The standard deals with Scotch derrick, Guy derrick and Tower derrick types of cranes, and lays down requirements relating to the crane as a whole, including electrical equipment and provisions for testing.

The clauses in regard to electrical wiring and cables have been brought into accord with the 12th Edition of the Regulations for the electrical equipment of buildings recently published by the Institution of Electrical Engineers. Another feature of the revision is the modification of the appendix relating to the design of struts. A new appendix follows the general method of application of the Ferry-Robertson formula for struts adopted in other British Standards and this indicates a step in the evolution of the crane standards in that enquiries are being made into the question of permissible stresses in crane structures, and it is probable that before long it will be possible to issue a supplement in order to amend the standard to deal with stresses in the crane structure on similar lines to those followed in other British Standards, such as B.S.449, 'The Use of Structural Steel in Building,' whereby the principle of using a factor of safety will be replaced by the specification of maximum permissible stresses and appropriate factors for their modification to suit the operating conditions.

Copies of this new standard (B.S.327, Pt. 1:1951) may be obtained from the British Standards Institution, Sales Department, 24, Victoria Steet, London, S.W.1, price 6s. post free.

TREATMENT OF COKE

By ROBERT MILLER, Assoc.M.Inst.Gas E., M.Inst.F.,
(W. J. Jenkins & Co., Ltd., Retford, Notts.)

Presented at the second annual general meeting of the Wales and Monmouthshire Section of the Institution of Gas Engineers at Llanelly on September 19 this paper presents information and thoughts on the treatment and preparation of coke. The present favourable marketing conditions may not continue for ever and future goodwill will be based on production of a good, clean, consistent product. The paper covers the progress of the coke from the retort discharge to the loading outlet of the hoppers and touches briefly also on the subjects of stocking and marketing. It describes the different types of conveyors. elevators, and screens, and sets out principles and practice, commenting on the advantages and disadvantages of the various pieces of plant described, not as odious comparisons but as a guide to selection.

MECHANICAL handling, intelligently installed, can do much to reduce the cost of handling materials in bulk. F. G. Mitchell's paper to the Mechanical Handling Convention in 1948 showed that despite the rising curve of wages between 1915 and 1948 mechanisation of handling enabled cost of coal handled per ton in power stations to fall steadily, and that despite rising costs in the price of steel over the same period, improvements in manufacturers' designs caused the cost of steel used per ton of coal handled to fall steadily also.

When designing a new system, it is essential that the conveying plant is made of ample capacity and that it is also made as automatic as possible. Mechanical handling systems should be regarded as a single machine, each part being geared to all other parts. Quality of equipment should be made the criterion of choice and not price; the best possible quality is always the cheapest in the long run. A bad system, to which is later added some new piece or pieces of equipment, will still generally be a bad system.

These remarks apply particularly to coke handling and grading systems. The gas industry has been and will continue to be for many years to come a two fuel industry, the revenue from the secondary fuel, coke, assisting materially in supplying the primary fuel, gas, at a competitive market price. It is simple economics to visualise that the greater the sales that can be developed for coke, the greater the stimulus that will be given to the market for gas. In 1935, W. L. Boon, in his paper to the Institution of Gas Engineers, on coke preparation, marketing, and utilisation, stressed the need for the supply of clean, graded coke, and many writers since have laid further emphasis on this necessity. By following these recommendations the gas industry can develop sound markets and ensure a steady demand for coke products. To prepare these products, correct plant should be installed, due care and attention being paid to the characteristics of the material being handled. Without this care, degradation of the products can occur with consequent serious effects on revenue. Haphazard choice of equipment is to be deprecated, particularly as expert advice is always available to ensure correct choice for the particular set of conditions.

It is apposite to add that the mechanical handling system will only continue to function efficiently and cheaply if it is well maintained and users of this equipment can do much to help themselves, particularly in these days of acute steel shortages, by adhering closely to the recommendations of the plant designers with regard to spares. These lists are issued as a result of long experience and are designed to take care of most eventualities.

Principles of Conveying

Coke is friable and of comparatively weak mechanical strength and thus particular care must be paid to the design of plant for handling it in bulk. Breakage occurs at every drop, feed point, or change of direction in travel with the production of more breeze on each occasion. Degradation must be kept to a minimum as the revenue from coke will be materially reduced by excessive breeze formation. Furthermore, coke in all its sizes is highly abrasive and causes high wear and tear. This is particularly so in the case of coke fines which can have the abrasive power of a carborundum compound; hence gears and bearings must be specially protected and/or sealed. Points of maximum wear must be provided with easily renewable wearing strips or liners.

It should be remembered also that the steam from freshly quenched coke will contain the volatile oxides of sulphur and will therefore be highly corrosive in character. Owing, therefore, to the fairly high rate of renewal that is inevitable when handling coke, designers must aim at a substantial design while endeavouring to keep initial capital costs as low as possible without skimping. Any attempt at skimping would naturally give rise to costly renewal problems early in and throughout the life of the installation.

Types of Systems

Drag Bar Conveyor.—This is a simple and robust chain conveyor, the most common type in use being the De Brouwer chain. The conveyor runs in a steel trough, fitted with renewable liners, in which is maintained a shallow layer of water. Automatic sprays quench the hot coke and the water acts as a lubricant. Proper installation, with adequate drainage, results in minimum moisture contents (5-7% in large coke and 10-15% in smalls), and minimum production of fines with low wear and tear. Care should be taken to ensure a high 'ton-mile' factor —*i.e.*, the chain must not be run for long periods under light load or no load conditions.

Hydraulic Sluicing Conveyor.—This conveyor, known as the Le Fleuve, like the drag bar conveyor, combines the duties of coke conveying and quenching in one operation. Water should have a flow velocity of 10 ft. per second and the trough should have a fall of about 1 in. in 10 ft. The hot coke is carried along in a state of semi-suspension due to the rapid evolution of steam. Separation of the coke and water at the discharge point (where the water drains back into receiving tanks and the coke passes forward to a receiving hopper) is effected either by an inclined grid screen or perforated tray or drag bar conveyor or by a power driven 'water wheel' with perforated buckets. The conveyor trough can be of cast iron, steel or reinforced concrete construction and should be lined with hard wearing brick or tile, or with renewable metal liners.

If this type of conveyor is installed with velocities much below 10 ft. per second, troubles may arise through piling up of the hot discharged coke in the conveyor trough and overquenching of the coke substance due to excessive time of immersion. With weekly-caking coals the production of high moisture content coke is impossible to avoid, due to the shock

cooling causing fracture of the large pieces and the resultant over-quenching of the smaller pieces of more porous coke. In one large unit the view is held, as a result of long-term observation, that sluicing conveyors produce a far greater proportion of fines than a corresponding capacity drag bar. A further disadvantage of this type of conveyor is the additional ground space requirements due to the fact that space must be allowed for ample settling/cooling tanks and the pump house. Mechanical means for removing the breeze settlings are essential on the larger installations and not only require further additional space but are costly in operation and maintenance. Generally speaking, the capital cost is higher than for drag bars, particularly where conversion of an existing retort house is contemplated and where bulk handling by telpher or hot coke cars exists. Maintenance costs favour the Le Fleuve system.

Belt Conveyors are particularly applicable to the handling of coke because the substance does not come into direct contact with any of the mechanical parts of the conveyor. With coke, the main cause of wear is at the feed point and it is a good general rule to keep the speed of the belts down to the minimum possible in order, also, to keep wear and tear of the belt surface down to a minimum.

At the feed point, or loading chute, particular care must be paid to design, the aim being that the material, when flowing down the chute, acquires nearly the same horizontal velocity as the belt. Abrasion and cutting are thus reduced to a minimum. A cut-away bottom plate to the chute is helpful as this allows the fines to deliver first and form a cushion for the larger pieces. It is obvious that with this type of feed, particular care has to be paid to the clearances between the plate of the chute and the belt surface.

The use of rubber covered 'cushion' idlers under the delivery point, particularly when dealing with large coke, assists in increasing belt life. Coke should never be allowed to drop vertically on to a rubber belt as the cutting action will considerably reduce the life. Belt conveyors suffer from the disadvantage of a limitation in the angle at which material can be elevated and these conveyors can be installed only where there is ample ground space. Attempts have been made to increase the capacity of existing conveyor belts by increasing the speed, but there are critical limits to such a procedure.

Chain and Bucket Elevators.—There are two main types of this elevator, the spaced bucket and the continuous bucket. Bucket elevators are unsuitable for materials that tend to clog—*e.g.*, coke containing a high percentage of wet breeze, as progressive clogging of the buckets will reduce the carrying capacity until, in the worst possible case, no transfer would be effected at all. It will be found also that clogging material tends to accumulate in the boot of the elevator and the situation will occur where several buckets are attempting to dredge their way through a mass of material at this point with consequent heavy straining of the chains and the possibility of damaging or even of tearing buckets off the chain.

With both types of elevator the two important design points are the feed and the discharge. Spaced bucket elevators can be either dredge or fly fed, but the incorporation of a feeder, of which there are several types, is the better practice. Continuous bucket elevators are always fly fed. The discharge must be designed so that the material leaves the buckets cleanly and with a velocity and trajectory to take it into the head chute. Roller guided buckets should, if possible, be avoided for coke handling, skid guiding being preferable despite the heavy wear and tear.

Belt and Bucket Elevators.—The features of chain and bucket elevators apply here, but this type of elevator is more preferable for coke handling than the chain and bucket type as it has a smaller number of moving parts and does not require lubrication, as does a chain elevator. The abrasive action of coke grit will not be the same on a rubber belt as it is on the pins and bushes of elevator chains. Elevators are used where space limitations prevent the use of belt conveyors.

Skip Hoists have many features in their favour for the elevation of coke. The ratio of pay load to gross load is high, there are few moving parts, lubrication is low and renewals of wearing parts are easy and cheap. The skip hoist will handle large, lumpy material, keeping breakage to a minimum as the material is quiescent in the skip. It requires comparatively small ground space and, compared with an inclined belt or chain elevator, if the lift and capacity be high, will be lower in horse power demand.

The bucket of a skip hoist is not affected to any marked degree by materials that would cause severe clogging problems on an elevator and, furthermore, the portions of the bucket subject to abrasive attack can be suitably protected with renewable liner plates.

Hoists can be built up to a lift of 150 ft. and can be vertical, inclined, or cranked, with speeds varying from 40 ft. to 300 ft. per minute, dependent on individual requirements. If speeds above 150 ft. per minute are used, then special accelerating/decelerating gear is required at both terminal travel points. Hoists cannot give the very high capacities obtainable by belt conveyors but a duplex counterbalanced unit can elevate coke at 100 tons per hour. Single skip units, except for short lifts, should be counterweight balanced, the counterweight being equal to the weight of the empty bucket plus half the load—*i.e.*, load on the motor at any part of the cycle shall be equal to half a skip load; reduction in motor horse power and hence current consumption is ensured by this method. Operation can be manual, or semi or fully automatic. The method selected depends on the duty required.

Gravity Bucket and Lip Bucket Conveyors.—The gravity bucket and lip bucket systems usually combine the duties of elevating and conveying. These types of conveyors, while not entirely free from clogging of the individual buckets, have an advantage over the bucket elevator in that they are entirely free from any dredging or compacting action which is inherent in a bucket elevator. The buckets being slower moving and usually of much larger capacity than elevator buckets, make-up is formed by material sticking rather than packing. There is a limit to the amount that will stick and beyond this the material periodically breaks away.

Gravity buckets need some form of rotary filler because of the necessity of avoiding spillage at the feed point. This problem does not arise with the lip bucket where the feed may take the form of a simple chute. The outstanding advantage of these conveyors is their ability to provide a quick lift in a small ground space. It is, however, the strong opinion of my Company that these conveyors should always be equipped with fully automatic lubricators, particularly when handling coke.

Their main disadvantage is their very high rate of wear and tear. We have, for some considerable time, been carrying out research in attempts to find either some suitable protecting medium for the steel buckets or some suitable substitute metal for steel. To counteract wear and tear, the effect of rubber lining the buckets has been tried. This was found to be very expensive. It was found also to be too heavy, causing limitations from this aspect and, furthermore, it was found that a clean discharge from the bucket was not obtainable due to the increase in friction coefficient between the lining and the material. The effect of enamelling the buckets with hard stove enamel has also been tried. It was found that this increases the resistivity of the buckets to corrosion, but does not decrease to any marked degree, in proportion to its cost, abrasive attack.

The use of cast aluminium alloy buckets is at present being tested. These buckets are expensive and the experiment has not yet continued for sufficient time to state how the life of an aluminium bucket will compare with the life of a steel bucket when handling coke, and hence whether the increase in expenditure is justifiable.

Buffer Storage

The provision of buffer storage between the coke production unit and the grading plant has several functions and the decision of how much buffer storage should be installed will depend on which or how many of the functions the storage will have to accommodate. Primarily, it is installed to serve as a buffer

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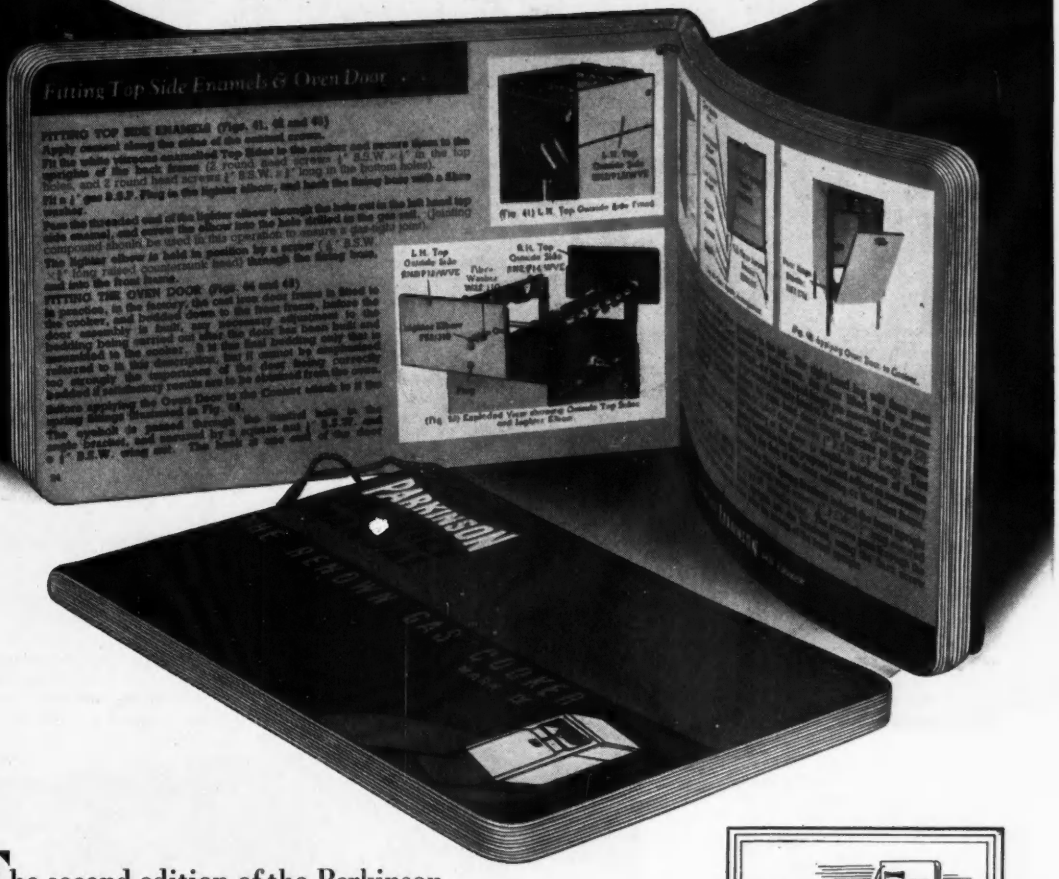

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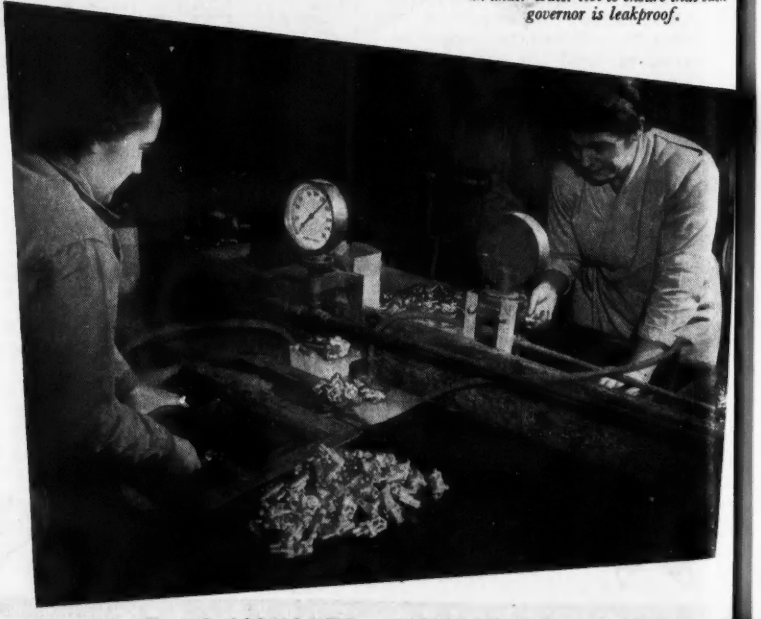

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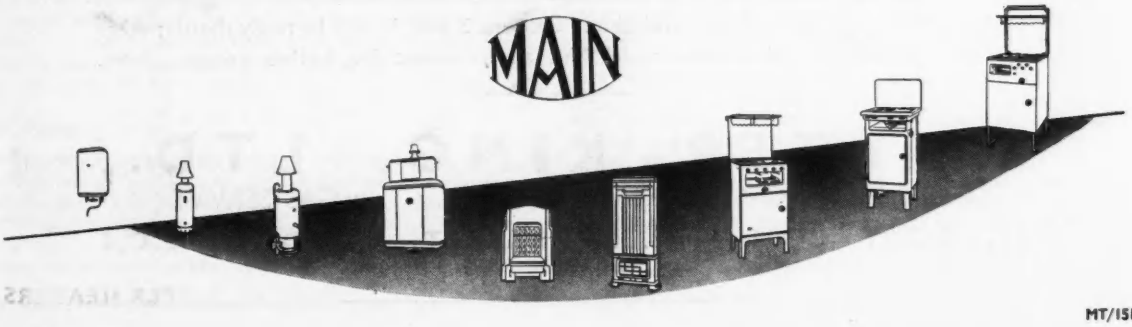

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and smooth out any irregularities in production and in its simplest form consists of a small dump hopper. Where it is undesirable to run the grading plant at night, the buffer storage will be of sufficient capacity to hold the night's make of coke. This will entail having conveyors and screens of sufficient capacity to handle the night coke as well as the make coke in the working period of the grading plant.

Buffer storage can also be installed for 16 hours make and this feature has much to recommend it. It must be installed with a set of screens capable of handling the total day's make in eight hours; the saving in labour costs that can be effected by such a set of conditions can easily be visualised. This saving of money, capitalised, is more than adequate to compensate for the additional cost of such a plant. Provision of adequate buffer storage will ensure continuity in the gasmaking process if the grading plant breaks down or during major maintenance periods. It is possible, of course, to cover shut down due to breakdown by provision of elevating and screening units in duplicate. Each alternative must be considered on its particular costs and merits. A further useful function of a buffer hopper, applying particularly to processes of static carbonisation, is that hot, freshly quenched coke can be held in storage for such a period that it is quite cool before elevation, and corrosion problems of the grading plant and its ancillary equipment are thereby obviated.

Principles of Screening

The physical characteristics of the material to be screened affect materially the size and type of screen to be selected. Spherical shaped particles screen very readily; cubical and crystalline shaped particles require a larger screen area for an equal input. The moisture content and particularly that of the smaller particles is also an important factor, surface moisture being particularly so. Moist materials tend to cling together and require high vibratory conditions to prevent the formation of 'mats'; this is very much the case with fine breeze. There is also the possible factor of fines adhering to the larger pieces and so reducing screening efficiency.

When designing new screens a complete and thorough size analysis of the material to be screened is of vital importance and the particular factor to be obtained from this analysis and the one which has the major effect on design is that of percentage of 'near size' material in the input—*i.e.*, the material very close in size to the openings of the screen cloth. It is the amount of this material present in the feed and not the rate at which the material is to be fed that decides the amount of screening area necessary to ensure accurate sizing. When both high capacity and high efficiency are made criteria of the design, sufficient excess screen area must be supplied to ensure these conditions.

The grading of coke can be carried out in descending or ascending order of size or by a combination of both—*i.e.*, for descending treatment the coke will be fed to a screen to remove the largest size, the balance passing on to a further screen or screens where the process is repeated; alternatively, for ascending treatment, the first screen will pass the smallest size to the hopper, the balance going forward for treatment on similar lines. The combination of these methods means that the first and maybe the second largest sizes are taken out (scalped) in the first stage and the balance graded in ascending order of size. The practice of scalping has much to commend it, as by this means only the smaller (and the more stable) pieces are subjected to the action of the screening machinery. The scalped coke can then be sold as large or, if a high demand for the smaller grades exists, can be passed through a cutter as required to meet demands for cut coke.

Scalping

The requirements of the scalping screen are ability to handle a high rate of feed with the passage of a very high percentage of the feed through the screen. Very close sizing—*i.e.*, high efficiency of screening, is not usually necessary. The grizzley roll type of screen is suitable as a scalper, but this type is not generally suitable for low inputs and is best at rates above 50 tons per hour. Both the reciprocating and the vibratory type can be and are used at rates up to 50 tons per hour, which is nearly the top capacity for both types. It is well known that ash in coke, other than inherent ash, finds it way into the smaller sizes and advantage can be taken of this fact on works where there is a high rate of small coke consumption. The scalping screen can be used to remove these smalls of high ash and moisture content which can then be suitably graded for works requirements—e.g., producers and boilers—while the clean scalped coke can then be used entirely for sales.

Reciprocating Screens

A reciprocating screen is, in effect an agitated tray in which a quick forward motion is combined with a slight lift, hence keeping the coke alive throughout its travel along the screen. This type of screen has the advantage, arising from the double motion imparted to the coke, that it constitutes its own conveyor and the system is therefore extremely efficient, simple in design and power requirements and moving parts are reduced to the minimum. The Jenkins balanced reciprocating screen consists of two trays working from one crankshaft, the throws being arranged at 180 degrees. The tray members are usually light channel pressings which carry the screen cloths, these being secured by bolts and continuous timber clamps and wedges. Suitable cross bracings and bridge plates for the drive connections are provided.

The trays are carried on wooden laths of specially selected and prepared timber or, in the latest design, on laths compounded of special plastic bonded material. These laths are mounted on the main frame and are attached to the tray sides. The angle of inclination of the laths is very important and the regular checking of this angle is a necessary part of good screen maintenance. Crankshaft speed is 400 r.p.m. for all sizes of screens with a latitude of plus or minus 10 revolutions. The screens work horizontally and distribute their products over the range of hoppers. They can be fitted either to remove the coke in ascending order of size, large coke being delivered from the end of the screens, or, if desired, the first tray may be fitted with a double deck, the large coke leaving the tray by side chutes.

The width of the tray and the length of each mesh will be decided by the input size analysis and also by the length of the hoppers over which the screens are to distribute.

Vibratory Screens

These are high duty screens giving a high throughput per unit area and lend themselves easily to multiple deck construction. The vibrating unit is usually either of the out-of-balance motor type or electro-magnetic type. Certain types employ a belt drive between the motor and the vibratory unit, but the essential feature of all types is that the screen and vibrating unit constitute a single part. When these screens are used as main screens to supply the four or five grades of coke normally sold by the gas industry, it is found necessary to introduce a belt conveyor system between the screens in order that satisfactory layout over bunkers can be obtained.

Reciprocating screens may not have the same high throughput per unit width or area as vibrators, but on the overall picture of screening two or three sizes, the area occupied by vibrators and their belts and chutes is greater than reciprocators which screen and convey in one self-contained unit. The capital cost of a reciprocating screen layout is less than for an equal sized vibratory screen and conveyor design, particularly when taking into consideration saving in screen house size. The H.P. requirements for reciprocating screens are less than for vibratory screens and belts for equal duty. The maintenance is probably less costly and is certainly less extensive —*e.g.*, with vibratories, not only have screen cloths to be considered but the relining of chutes between screens and belts. The high duty of vibratory screens causes a higher rate of wear and hence more frequent renewals and, although the cost of meshes may be equal for both, the labour costs for more frequent renewals for vibratories makes the total cost higher.

Two main types of coke cutter are in use today, the single roll cutter and the double roll cutter. In the single roll cutter the cutting action is brought about by passing the coke between the cutter roll and a breaker plate, the plate being fixed or floating according to the maker's design. The distance between the roll and the plate is variable. The design of the teeth varies from maker to maker, as also does back plate design. With two roll cutters, the coke is passed between two cutter rolls carrying cutter teeth, again of a variety of designs, the distance between the two rolls being variable within the limits of the particular machine, but usually from 2 in. to 5 in. The methods of driving the rolls vary, some makers driving both rolls at the same speeds, others run the rolls at different speeds, while in one machine only one roller is driven, the other being turned by the action of the coke passing through.

Of all plant used in the treatment and handling of coke, the cutter is by far the greatest breeze producer. Tests have not produced any definite information that the single or the double roll produces less breeze; the results vary and are influenced by the type of coke more than anything. Tests have, however, produced some basic principles on coke cutting which apply equally to both types of machines. Feeders of a suitable type should be installed at the inlet to the cutter in order that uniform and correct feeding shall be maintained. Cutters should never be fed at a rate in excess of their rating; this causes increase in breeze formation. It is preferable to install a cutter whose throughput is in excess of the general plant rating. Run of retort coke should never be fed through a cutter; it is far more preferable to remove the undersize coke and to cut only the oversize fraction. The spacing of the cutters on the roll shafts should always be related to the size of the product required, the distance between the cutters being always higher than the product size.

The ratio of cutter feed to products should never exceed three to one. If cutting in excess of this ratio is required then two stage cutting must be resorted to—*i.e.*, after the first cutting action the material should be screened and all over size material passed through a second cutter where the final breakdown can be effected. Maintenance of the cutter should be of a very high standard.

Coke Bunkers

Nowadays it is the exception rather than the rule to have bunkers of all steel construction. Reinforced concrete is the medium most customarily employed, but for capacities of 100 tons or less, steel-framed brick-panelled construction can be used and will probably cost less; the steel cones must be lined with suitable hard wearing material; the screen housing can be of steel-framed sheeting construction. Due mainly to the elimination of painting, the maintenance of reinforced concrete bunkers is lower than that of steel framed bunkers. It should be noted, however, that the steel-framed construction will lend itself to modification far more easily than the somewhat rigid nature of reinforced concrete structures.

The cones of concrete hoppers should be lined with hard engineering brick and this lining can be carried up the bunker walls also. It is generally considered, however, that 1½ in. to 2 in. of concrete over the reinforcement steel is sufficient protection for the walls. With unlined walls it is necessary for regular inspections to be carried out for cracks, which must be suitably treated as found. Failure to carry out corrective treatment of cracks in hopper walls can result in serious corrosive attack on the steel, possible bursting-off of the concrete cover and the exposure of large stretches of steel to attack. The correction of this state of affairs can become very costly.

Coke below ¾ in. in size is usually fairly stable and can undergo a reasonable amount of handling or withstand considerable fall without suffering further serious degradation. With coke above this size degradation is always a certainty and an anti-breakage device should always be used for lowering this material into the hopper. The most common form of device is the cast iron spiral chute which can be surfaced with renewable tiles either of brick or cast iron. Criticisms are occasionally levelled at spiral chutes consisting of the following main points:—

(1) The fitting of these chutes causes a loss in hopper capacity.

(2) The coke tends to run off the chute and fall vertically.

(3) The cross supports to the chutes in the hopper tend to aggravate the holding up of coke, particularly with the larger grades.

Loss of hopper capacity will occur when fitting the chutes to existing hoppers; in new designs this point will be covered by the designer. When handling run of retort coke with a percentage of wet breeze a spiral having a steeper angle must be employed. Large lumps on their own or when fed at a low rate tend to over-run and bounce, but this must be suffered if the chute is to be correct for the worst conditions.

Spiral chutes need not be run close to the bottom of the hopper and they can, quite satisfactorily, finish above the cone. There will be some degradation of the first batch of coke to fall from the spiral to the bottom of the hopper cone when using this method, but once a satisfactory pad has been formed, degradation will be small or negligible. By terminating the spiral at the point indicated, the possibility of the cross supports causing hanging up is very much reduced. It is pertinent to point out here that a far greater cause of hanging up in hoppers is the presence of fines in the coke mass, caused either by degradation or inefficient screening. The advantages of fitting spiral chutes more than outweigh the disadvantages and their use ensures a minimum degradation of the product. In Communication No. 386, presented at the annual meeting of the Institution of Gas Engineers this year, L. J. Clark and J. H. Walker laid stress on the advantage in finished product to be gained by the use of spiral chutes.

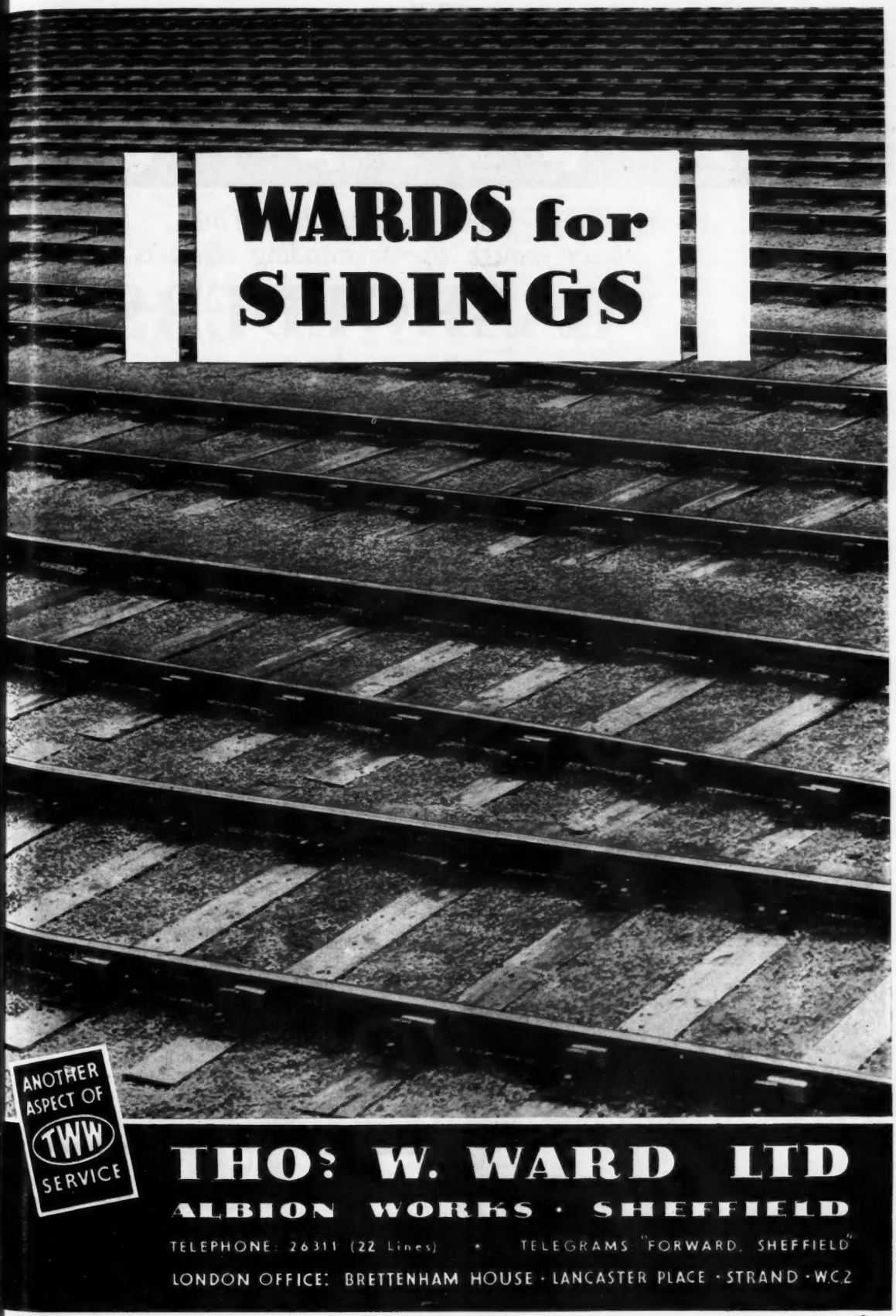
Loading

All hoppers are equipped with provision for the bulk loading of coke to either rail wagons or road lorries. Dependent on the size of the hoppers and available facilities, the bulk loading chutes may be fitted to both sides or one side only. Provision should be made for the quick and easy filling of coke into sacks as the amount of sales in sacks is showing a tendency to rise generally. The bagging equipment can be of the hand operated weighing and bagging type or can be the much more expensive, but much faster, combined automatic weighing and bagging machine.

Whenever coke is held in a hopper, some degradation of the product occurs on its travel from the top to the bottom of the hopper due to attrition. In order that customers are provided with a good, clean product, the undersize in each grade should be removed at the loading point before the material is delivered. Static screens of various types have been used for this purpose, but their efficiency is low if anything like a high rate of loading is required. Vibratory screens have been specially developed for this purpose and, as they have a high throughput per unit area, combine the two qualities of an efficient removal of fines and a high rate of loading.

In their simplest application the vibratory screens used for this purpose are debreezing or de-dusting screens. As long ago as 1941, Mr. W. Morland Fox, in a reply to a paper on coke standardisation by Mr. W. L. Boon, while indicating that the removal of breeze from the coke at the loading point was essential in the customers' interest and for the build up of future goodwill, carried this question of removal of fines during loading at a stage further. He indicated that removal of breeze was not sufficient for the larger grades and suggested the use of a larger mesh than that necessary to remove breeze only. From this has sprung the term 'Guard Screening.' By this term is meant the removal of products of storage degradation from the coke of all sizes, and it is recommended that the mesh for the guard screen shall be about one-half of the bottom sizing of the coke product flowing over it—*i.e.*, if coke with a bottom sizing of 2 in. is being sold, then the guard screen located in that chute shall be 1 in. or slightly less in mesh size.

Debreezing and/or guard screens may be fixed self-contained units at each loading chute or one or more travelling units may serve several delivery chutes. When a screen is used in the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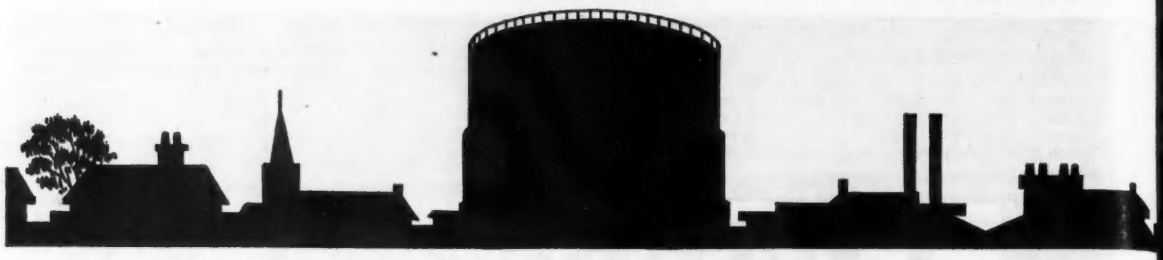

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latter way it must be borne in mind that the size of the screen mesh will be governed by the size of the smallest product passing over it and, if used for all grades, can only be a travelling debreezer or de-duster.

Much has been written on the necessity for standardisation and the development of markets for the consumption of the various standardised grades. The necessity for making the public coke minded has been stressed and also the necessity for ensuring that they are provided with the correct grade of fuel for the correct appliance. It may be argued that the fuel shortage is, of itself, making the public coke conscious, but this argument is only tenable if the product supplied is equal or superior to the fuel normally consumed. Unless care is taken to see that good, clean, easily combustible fuel is supplied now, when the demand is high, present emergency users will have only bad memories of a stop-gap fuel and, far from creating goodwill, the coke producers may be doing much to destroy it and making future marketing conditions impossible. It behoves every supplier, therefore, to keep his products up to standard and to ensure that, wherever possible, customers are not supplied with imperfectly screened fuel, high in breeze content, and told that 'they are lucky to receive any fuel at all.'

DISCUSSION

The Chairman (**Mr. A. Pickard**) said he was pleased that Mr. Miller had dealt with principles rather than with actual plant, for that was the type of thing that was going to help the younger men to appreciate what to look for in dealing with the different types of coke which they would encounter in their later experience. Preparation of coke was a very important factor in the national fuel economy, and as Mr. Miller had rightly said, one could not expect to continue to retain the market unless the coke produced was as good as physical treatment, grading, and screening could make it.

Mr. W. Clark Jackson, Coal Officer, Wales Gas Board, said that the question of preparation of coke for the various markets had not received the attention it ought to have received. He had for a long time endeavoured to encourage the better treatment of coke and the study of its suitability for the domestic and other markets, but up to a very few years ago little screening and grading had been practised in South Wales. It was realised that coal quality influenced the final quality of the coke. They were in the midst of another fuel crisis, and while he did not want to give away any secrets he took the opportunity of asking every engineer and manager present to accept every ton of coal he could get between now and the end of October.

If they were to get good coke they must start in the first place with good coal; they would not work miracles with coal with high ash and dirt content. One problem tied up with that of coke was the question of coal blending. They had, particularly in South Wales, their south crop coal, which was a reasonably good gas coal but rather friable and gave a very soft coke with an excessive amount of breeze. The question of coal blending would require to be looked into in the near future. They had in the Monmouthshire coalfields some excellent coals not quite so suitable from the gas making point of view, but from the coking point of view they were excellent. They were reasonably low in ash content, and blending would help considerably.

So far as he was concerned as Coal Officer to the Board he was doing his best to eliminate some of the worst offenders among the coals they had been compelled to take in the past, and he had met with some measure of success. When they ran into fuel crises, however, there was great difficulty in taking such a stand, and he was afraid it was going to be difficult to improve substantially the quality of the coals which they were compelled to use. They had the matter well in mind, and in the new testing station at the Grangetown works they would eventually get down to testing the blending of various coals which would help coke quality considerably.

Mr. J. H. Dyde, President of the Institution, said he had come to the conclusion—and it agreed with that of the author—that the best way to move coke was by means of belt conveyors; the second best way was to move it in bulk by means of skip hoists, or, on smaller works, occasionally in lorries and Chaseside shovels or similar equipment. Regarding the operation of belt conveyors an essential item was maintenance; one should see that the belt was always running evenly between its guiding rails. The skip hoist principle had developed considerably in recent years, and it gave a very low power cost. It called for the provision of a minimum of wearing parts which could be made easily replaceable. The skip hoist would handle satisfactorily up to 100 tons an hour, which was sufficient to cover the requirements of all but the very largest works.

The question of maintenance cost was a big item against the continuous bucket conveyor and it was within his knowledge that experiments were being made in the vulcanising or rubber surfacing of the conveyor buckets. Tests had also been made in enamelling surfaces, but they had been found to be unsatisfactory. He felt that most of the trouble arising from bad screening was due to overloading, and the same applied to coke cutters. It was fatal to overload coke cutters and it was false economy not to renew worn parts as soon as they began to show signs of considerable wear. He had been interested in Mr. Clark Jackson's remarks on procuring the right sort of coals for carbonisation. The demand for coal from industry, the electricity industry, and the gas industry was advancing at such a rate that no-one could tell where our raw material was going to come from. Blending as suggested by Mr. Clark Jackson had been done on the Continent, but it involved costly machinery and would probably only be practicable for the larger works. It must be remembered that in blending, leaner coal was introduced and thermal output was bound to fall, and therefore adversely affect gas costs, but where the revenue from coke represented a high proportion of the price of coal there was justification for taking in coals that would meet both the gas supply and the essential coke requirements of the district.

Mr. H. Blythe (Colwyn Bay) said that in his experience he had found the belt conveyor the best from the breakage point of view. He had also had experience with the gravity bucket conveyor, and would have liked to see comparative costs per 100 tons of coke handled by the two methods. He happened to have a bucket conveyor which was installed 23 years ago. It had been handling coal, and very little had been spent on its maintenance. A gravity bucket conveyor put in at the same time handled coal and coke, and within five years it had to be renewed.

Mr. D. E. West (Merthyr Tydfil) enquired if anything could be done to make the conditions on certain screening plants a little better for the plant operators. Clouds of dust were created and conditions were sometimes very bad for the staff and the men on the plant.

Mr. K. E. Tiddy (Carmarthen) said there were many undertakings in Wales which were too small to justify the installation of expensive coke treatment plants. He asked whether the contractors were ignoring the needs of such small works, or whether they were taking any steps to meet the problems involved in the continued sale of untreated coke by the small undertakings.

The Author's Reply

Mr. Miller, replying to the discussion, said he sympathised with Mr. Clark Jackson and hoped that his blending experiments would prove successful. Mr. Blythe's experience with one conveyor lasting 23 years handling coal only, and another lasting only five years handling coke, bore out the fact that special care was necessary in handling coke. He would be pleased to let him have comparative costs of different types of conveyor. As to Mr. West's question on improving operating conditions, he congratulated him on having dry coke; his customers at any rate must be very happy. Dust removal was not easy, but they were practising it on larger plants by means of a vacuum technique. Power costs were high, and it was a question whether it was justified. It might alternatively be possible to get rid of dust by a system of water misting. In reply to Mr. Tiddy, small plants were in fact available and he would be pleased to show him some which might meet the requirements he had in mind.

The **Chairman** said the Section was indebted to Mr. Miller for giving the paper at short notice and they also thanked his Company and Mr. W. Morland Fox and Mr. R. Crowther, Directors, for permitting him to present it.

A vote of thanks was accorded on the proposition of Mr. **D. E. West,** seconded by **Mr. C. G. Reeves** (Wales Gas Board), which **Mr. Miller** briefly acknowledged.

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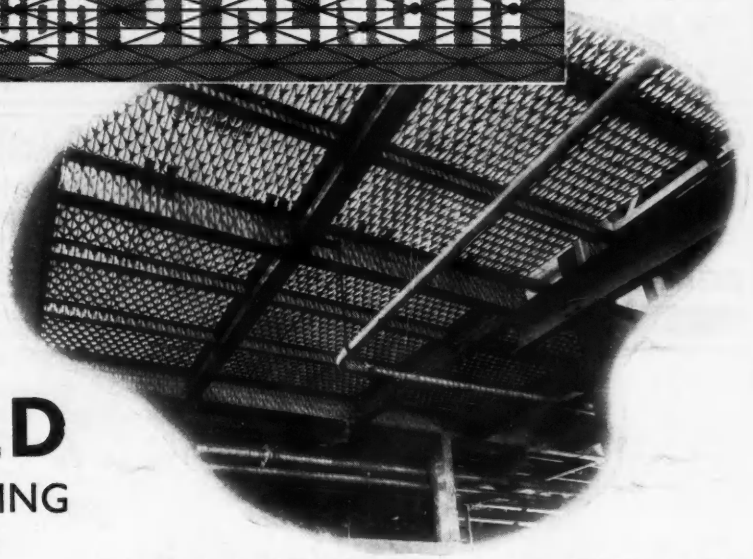

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Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

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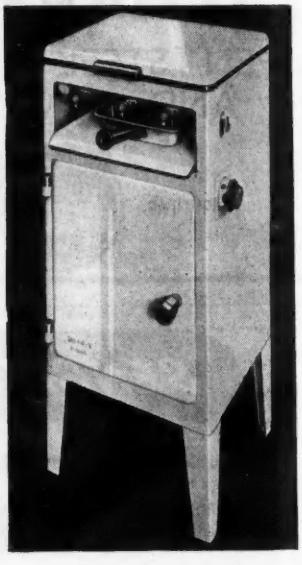

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PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates : Home and Empire :- 52/- per annum ; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements : All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's journal.

Displayed Advertisements : Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide ; block screen 120.

BUSINESS MANAGER : S. T. CULLEN

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NORTHERN MANAGER : W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone : Harrogate 84291.

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APPOINTMENTS VACANT

WALES GAS BOARD

GROUP INDUSTRIAL GAS ENGINEERS.

APPLICATIONS are invited from qualified engineers for the above appointments. Applicants are required to be fuel technologists and should have had considerable experience in the design, construction and installation of industrial and commercial plant covering a range of widely representative industries, and should be suitably qualified by examination. The salary attached to these positions will be related to the qualifications and experience of applicants.

Successful applicants will be required to pass a medical examination, and to subscribe to such scheme of superannuation as the Board may adopt.

Applications, stating age and giving full particulars of education, training, qualifications and experience and of salary required, together with the names of two referees, should be addressed to the Industrial Gas Engineer, Wales Gas Board, Bute Terrace, Cardiff, not later than fourteen days after the appearance of this advertisement.

C. B. MAWER, Secretary.

WALES GAS BOARD

WREXHAM UNDERTAKING.

SALES SUPERINTENDENT.

APPLICATIONS are invited for the appointment of a SALES SUPERINTENDENT at the Wrexham Undertaking of the Board.

Candidates should have had experience of the development of gas sales, the disposal of coke and other products, showroom management and consumer service.

The commencing salary will be within the maximum of Grade A.P.T. VI of the National Salary Scales. Living accommodation will be made available at a reasonable rental.

The appointment will be subject to medical examination and to such superannuation regulations as the Board may adopt.

Applications, giving details of age, qualifications and experience, together with the names of two referees, should be sent to Mr. J. F. Lloyd, Engineer and Manager, Wales Gas Board, Wrexham Undertaking, Rivulet Road, Wrexham, not later than October 22, 1951.

NORTH EASTERN GAS BOARD

BRADFORD GROUP.

FOREMAN (GASHOLDER AND STRUCTURAL STEELWORKS SECTION).

APPLICATIONS are invited for the position of Foreman in the Gasholder and Structural Steelworks Section, Bradford Group. A sound knowledge of the construction and maintenance of water-sealed gasholders will be an advantage. The successful applicant will normally be based in Bradford, but must be prepared to travel throughout the Group as required.

The salary offered is in accordance with Grade VI Provincial 'A' of the Intermediate Grades, that is £415 per annum rising to £460 per annum. The commencing salary will depend upon qualifications and experience.

Successful candidate may be required to pass a medical examination.

Applications, giving the names of two referees should be forwarded to the Group General Manager, North Eastern Gas Board, Bradford Group, Britannia House, Bradford, to be received by him not later than ten days following the publication of this advertisement.

J. C. GARDNER, Secretary.

Bridge Street,
Leeds, 2.
October 3, 1951.

HARDMAN & HOLDEN Ltd., invite applications for a post of TECHNICAL REPRESENTATIVE in the Fresh Oxide of Iron section of their business. The post is permanent with superannuation and offers considerable scope. Applications in writing, giving full details of age, experience and present salary, should be addressed to the Secretary, Manox House, Miles Platting, Manchester, 10.

RESEARCH ASSISTANT—To conduct applied Research on pilot and full scale plants in Chemical Engineering with reference particularly to the treatment of gases including cooling, scrubbing, and suspended particle removal. High academic ability as indicated by good Honours Degree in Chemistry, Physics, Engineering or Chemical Engineering, combined with considerable practical aptitude, is essential. Age around 25. Some research experience desirable but not essential. Applications, stating age, full particulars of education, qualifications and experience to be addressed to the Secretary, Whessoe Limited, Darlington, Co. Durham, by October 31, 1951.

URBAN DISTRICT COUNCIL OF NEWRY

(Northern Ireland)

GAS DEPARTMENT.

GAS MANAGER.

THE GAS COMMITTEE of the above Council invite applications from suitable qualified persons for the position of GAS MANAGER at a commencing salary of £600 per annum with the use of the Gas Manager's Residence situated at the Gas Works, along with a supply of Coal and Gas free of charge.

Applicants must have had practical experience in the operation of Vertical Retorts and Gas Works Plant generally and must be under 40 years of age. The person appointed will be required to take up his duties within one month from notification of appointment and will be subject to the contributory scheme under the Local Government (Superannuation) N.I. Act, 1950.

Applications stating age, qualifications and experience, accompanied by two satisfactory Testimonials and endorsed "Gas Manager" should be forwarded to the undersigned not later than Monday, October 22, 1951.

T. MCGEOUGH,
Secretary.

SOUTH EASTERN GAS BOARD

DRAUGHTSMAN—TAR WORKS,
ORDNANCE WHARF.
TUNNEL AVENUE,
EAST GREENWICH, S.E.10.

APPLICATIONS are invited for the above- mentioned position.

Applicants must be able to prepare specifications, general arrangement and detailed drawings of industrial plant and should have experience in power transmission, the lay-out of pipelines, the design of simple structures and the preparation of building and drainage schemes. Some shop experience is desirable.

The commencing salary will be within Grade VIII of the National Salary Scales (Metropolitan Area) in respect of Administrative, Professional and Technical Staff (£570-£650 per annum) according to qualifications and experience.

Applications in writing (quoting reference V.10/192) giving age, present occupation, experience and qualifications, etc., should reach the undersigned not later than fourteen days after the publication of this notice.

R. J. MCCRAE,
Personnel Manager.

Katharine Street,
Croydon.

(Classified advertisements continued on Supplement 4)

APPOINTMENTS VACANT (ctd.)

EASTERN GAS BOARD

IPSWICH DIVISION.

HOME SERVICE ADVISER—CHELMSFORD.

APPLICATIONS are invited from suitably qualified and experienced persons for the above position.

Candidates should have had at least two years training, possess a recognised diploma and have had practical experience in the duties concerned, which include the giving of cookery and other demonstrations, lecturing, running practical cookery classes and visiting consumers in their own homes to advise on the correct use of gas appliances.

The commencing salary will be at the rate of £364 per annum (Grade A.P.T. VI National Salary Scale, Provincial 'A').

Applications, stating age and full particulars of training and experience should be forwarded to the undersigned to reach him not later than fourteen days after the appearance of this advertisement.

W. J. COLLINS GARRARD,
General Manager,
Ipswich Division.

Eastern Gas Board,
Ipswich Division,
Crane Hill Lodge,
London Road,
Ipswich,
Suffolk.
September 25, 1951.

EASTERN GAS BOARD

IPSWICH DIVISION.

GROUP DISTRIBUTION & SALES MANAGER,

CHELMSFORD GROUP.

APPLICATIONS are invited from suitably qualified and experienced persons for the above position.

Under the general direction of the Group Manager, the appointment carries with it responsibility for the planning and laying of mains, and for the organisation and supervision of the fitting departments, the stores and showrooms.

The commencing salary will be at the rate of £720 per annum (Grade A.P.T. XII National Salary Scale, Provincial 'A').

The successful candidate may be required to pass a medical examination.

Applications, stating age, and giving full particulars of education, training and experience, should be forwarded to the undersigned, to reach him not later than fourteen days after the appearance of this advertisement.

W. J. COLLINS GARRARD,
General Manager,
Ipswich Division.

Eastern Gas Board,
Ipswich Division,
Crane Hill Lodge,
London Road,
Ipswich,
Suffolk.
September 25, 1951.

EASTERN GAS BOARD

NORWICH DIVISION.

ASSISTANT DISTRIBUTION SUPERINTENDENT.

NORWICH GROUP.

APPLICATIONS are invited from suitably qualified persons for the above position.

Applicants must be experienced in the utilisation of gas for domestic, industrial and commercial purposes, and in high and low pressure gas distribution, and should possess the Institution of Gas Engineers Higher Grade Certificate in Gas Engineering (Supply) or equivalent qualification.

The commencing salary will be within the Grade A.P.T. IX, Provincial 'A,' (£570–£670 a year).

A house is available at a reasonable rent.

The successful candidate will be required to pass a medical examination and the appointment will be subject to the provisions of any such superannuation scheme as may be adopted by the Board.

Applications, stating age and experience, and giving full particulars of training, qualifications, together with the names of two referees, should reach the undersigned not later than fourteen days after the publication of this notice.

J. V. KNIGHT,
Manager,
Norwich Group.

Gas Works,
Bishop Bridge,
Norwich,
Norfolk.

NORTH WESTERN GAS BOARD

FYLDE GROUP.

FIRST CLASS GAS FITTERS.

APPLICATIONS are invited for the above positions. The holding of the City and Guilds Technological Certificate in Gas Fitting will be an advantage. J.I.C., Schedule Rates of pay. Applications to be addressed to the General Manager, Fylde Group, North Western Gas Board, Princess Street, Blackpool, nd received not later than October 20, 1951.

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP.

STATION ENGINEER—

NORTH CHESHIRE & GLOSSOP WORKS.

APPLICATIONS are invited for the above appointment from suitably qualified persons with wide gasworks experience.

The person appointed will be responsible to the Group Production Engineer for the control and organisation of all activities on the Hyde, Dukinfield, Denton and Glossop Works.

The commencing salary will be £900 per annum and a house is available at a reasonable rent.

The successful candidate may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Applications, giving personal details and particulars of training, qualifications and experience, together with the names and addresses of two referees, should reach the General Manager, North Western Gas Board (North Cheshire Group), Gasworks, Portwood, Stockport, not later than fourteen days after the publication of this advertisement.

EAST MIDLANDS GAS BOARD

BOSTON.

APPOINTMENT OF TECHNICAL ASSISTANT

(Revised Advertisement)

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT at Boston. Applicants should be familiar with control of all gasworks plant and should possess a Higher grade certificate in Gas Engineering (Manufacture). Experience of Woodall-Duckham vertical retorts will be an advantage.

The appointment will be made within the national grade A.P.T. VI (£455-535). The post is superannuable and the successful applicant may be required to undergo a medical examination.

Applications stating age, qualifications, present salary, training and experience, together with names of two referees, should be sent to the undersigned to arrive not later than October 20, 1951.

B. CLARKE,
Divisional General Manager.

Gas Offices,
Newland,
Lincoln.

EAST MIDLANDS GAS BOARD

LEICESTER AND NORTHANTS. DIVISION.

TECHNICAL ASSISTANTS—

LEICESTER UNDERTAKING.

VACANCIES exist for TECHNICAL ASSISTANTS in the Leicester Undertaking at the Manufacturing Stations and in the Industrial Heating Department.

Applicants for a position at the Manufacturing Stations should be conversant with the control and operation of all Gas Works plant, and be able to carry out routine testing. Experience in the operation of vertical retorts will be an advantage.

In the case of the Industrial Heating vacancy, applicants should possess a knowledge of the utilisation of gas in industry.

The salary will be within the range of A.P.T. Grade V of the National Salary Scales (£425-£505 per annum) according to age and experience. The posts are superannuable and the successful applicants may be required to undergo a medical examination.

Applications stating age, qualifications, present position and previous training and experience, together with the names of two referees, should be sent to the undersigned to be received not later than October 20, 1951.

C. C. WOOD,
Divisional General Manager.

Gas Offices,
Millstone Lane,
Leicester.
September 29, 1951.

EAST MIDLANDS GAS BOARD

SHEFFIELD AND ROTHERHAM DIVISION.
HOME SERVICE ADVISERS.

VACANCIES occur for HOME SERVICE ADVISERS within the area of the Sheffield and Rotherham Division.

Candidates must hold a recognised qualification in cookery and Domestic Science and have had practical experience in these subjects. They must also be capable of demonstrating and promoting the use of gas appliances, and of advising consumers on kitchen and other domestic problems involving the use of gas.

The salary will be within the range of £260/£404 according to age, qualifications and experience.

The posts are superannuable and the successful applicants may be required to undergo medical examination.

Applications stating age, qualification and experience, together with the names of two referees, should be addressed to the Divisional Personnel Officer at the address below, to be received not later than October 29, 1951.

E. H. HARMAN,
Divisional General Manager.

Gas Offices,
Commercial Street,
Sheffield, 1.
October 6, 1951.

EAST MIDLANDS GAS BOARD

SHEFFIELD AND ROTHERHAM DIVISION.
ASSISTANT ENGINEER.

A VACANCY occurs for an ASSISTANT ENGINEER at the Neepsend Works, Sheffield, where the plant includes continuous vertical retorts, horizontal retorts, C.W.G. Plant, tower purifiers, etc.

Applicants should possess the Higher Grade Certificate in Gas Engineering (Manufacture) and have experience of plant operation at a large works.

The appointment will be made within Grade A.P.T. IX (£570–£670) of the National Salary Scales. The post is superannuable and the successful applicant may be required to undergo a medical examination.

Applications stating age, qualifications, details of previous training and experience and giving the names of two referees should be sent to the undersigned not later than October 29, 1951.

E. H. HARMAN,
Divisional General Manager.

Gas Offices,
Commercial Street,
Sheffield, 1.
October 6, 1951.

EAST MIDLANDS GAS BOARD

NOTTS. & DERBY DIVISION.

ILKESTON UNDERTAKING.

TECHNICAL ASSISTANT.

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT in the above Undertaking.

Applicants should hold the Higher Grade Certificate in Gas Engineering (Manufacture), should have a sound experience in Works operation, the control of W.D. Vertical Retorts, laboratory tests, and be capable of making simple drawings.

The salary will be in accordance with A.P.T. Grade VII, £500/580 per annum, and initial placing on the scale will be according to age and experience.

The post is superannuable and the successful candidate may be required to undertake a medical examination.

Applications stating age and experience, and giving full particulars of training, qualifications, together with the names of two referees, should be addressed to the undersigned for receipt within fourteen days of the appearance of this notice.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts. & Derby Division,
Friar Gate,
Derby.

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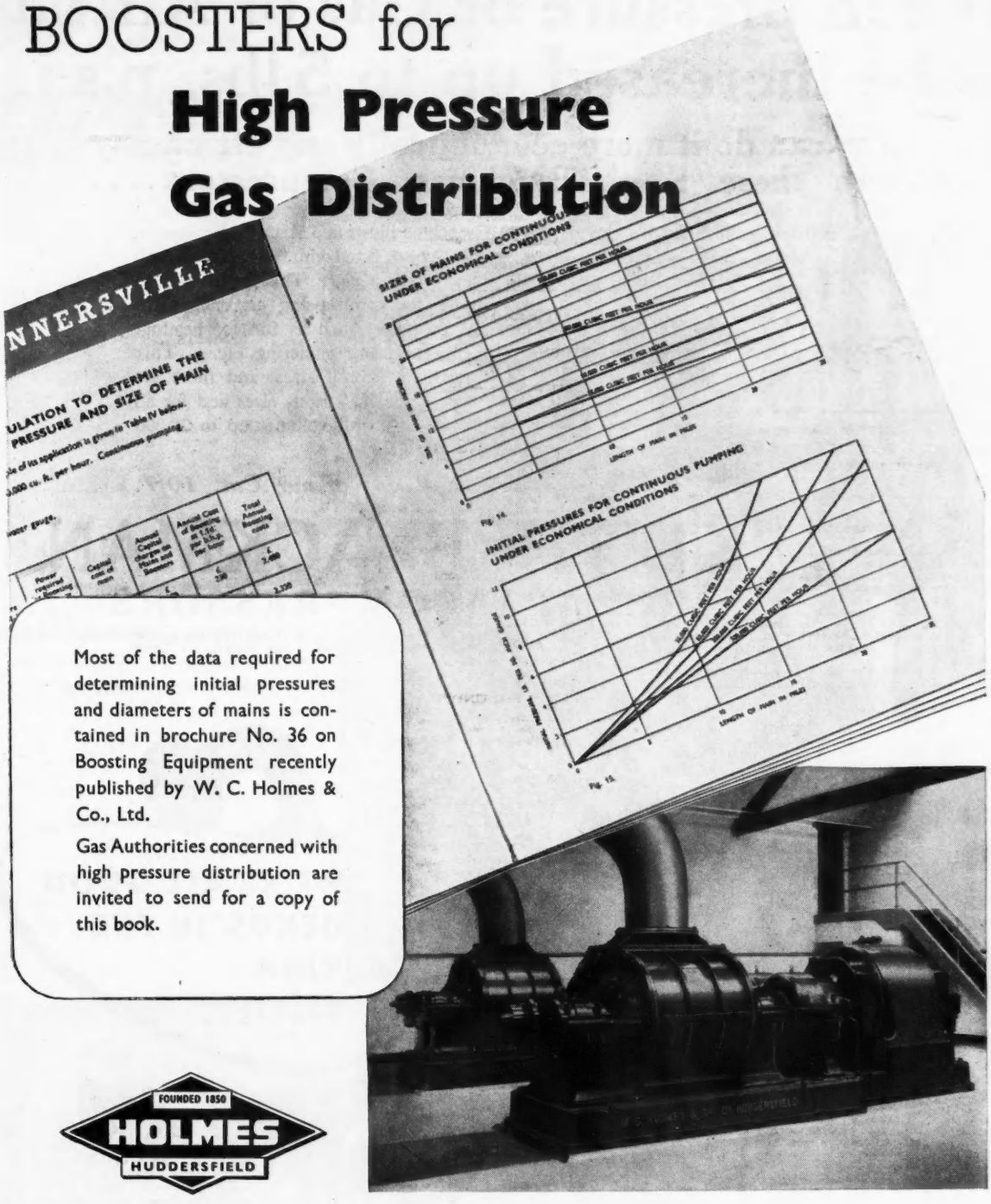
'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

BOOSTERS for

High Pressure Gas Distribution



Most of the data required for determining initial pressures and diameters of mains is contained in brochure No. 36 on Boosting Equipment recently published by W. C. Holmes & Co., Ltd.

Gas Authorities concerned with high pressure distribution are invited to send for a copy of this book.

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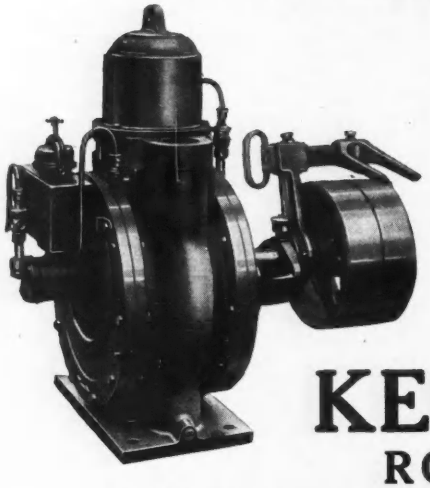

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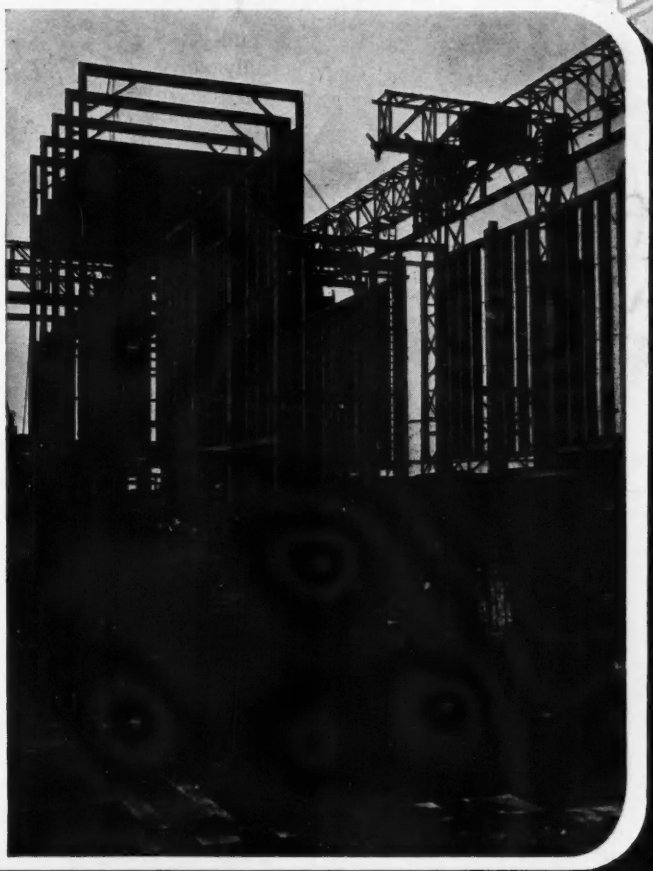

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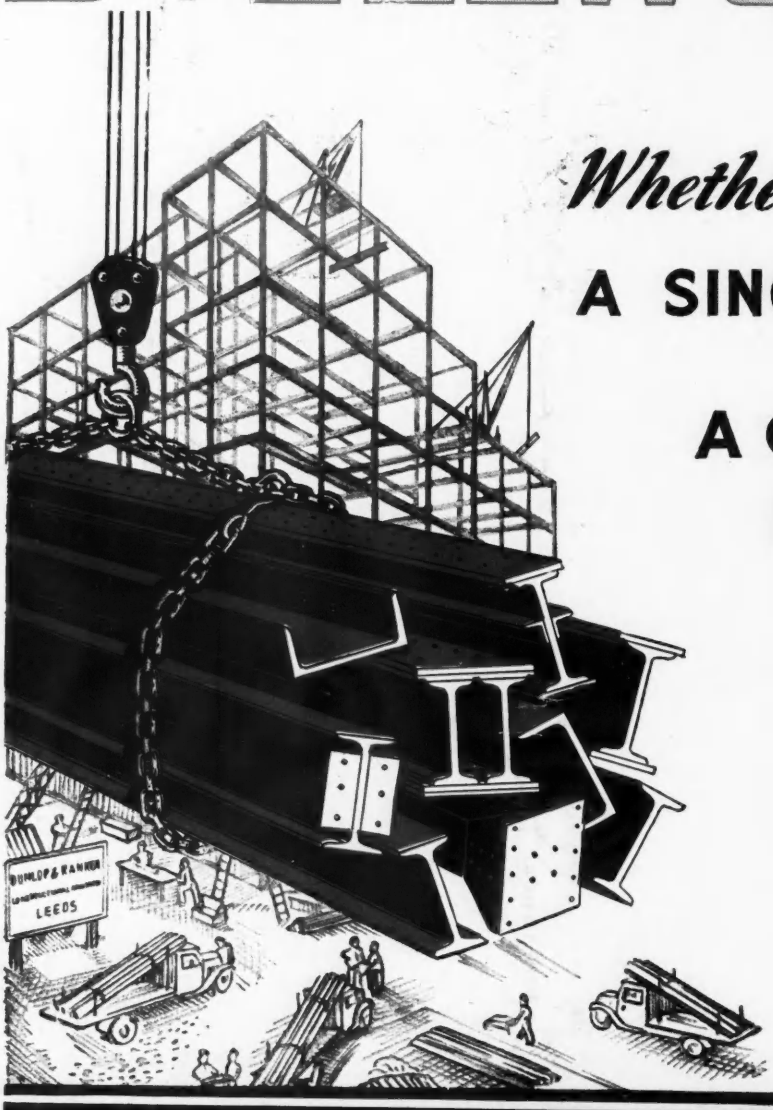

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